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National Aeronautics and
Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, Alabama 35812

STREAM TABLE PROGRAM

USER'S MANUAL

AND

PROGRAM DOCUMENT

MAY, 1981

(NASA-CR-161810) STREAM TABLE PROGRAM:
USER'S MANUAL AND PROGRAM DOCUMENT Final
Report (Computer Sciences Corp.) 83 p
HC A05/ME 101 CSCI 09B

N81-26746

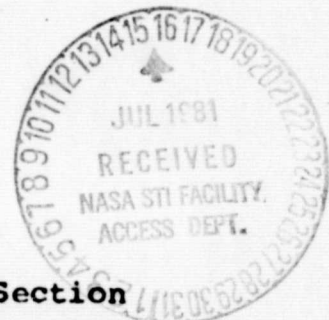
Unclas
G3/61 26741

Prepared for:

NASA/George C. Marshall Space Flight Center
Huntsville Computer Complex

Prepared by:

Computer Sciences Corporation
Engineering Systems Department
Project Development and Systems Support Section



STREAM TABLE PROGRAM

USER'S MANUAL

AND

PROGRAM DOCUMENT

MAY, 1981

NASS-31640

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COMPUTER SCIENCES CORPORATION

ABSTRACT

This program was designed to be an editor for the Lewis Chemical Equilibrium program input files and is used for storage, manipulation and retrieval of the large amount of data required. The files are based on the facility name, case number, and table number. The data is easily recalled by supplying the sheet number to be displayed. The retrieval basis is a "sheet" where "sheet" is defined to be all of the individual flow streams which comprise a given portion of a coal gasification system. A "sheet" may cover more than one page of output tables. The program allows for the insertion of a new table, revision of existing tables, deletion of existing tables or the printing of selected tables.

No calculations are performed. Only pointers are used to keep track of the data. The process is done interactively with a TEKTRONIX 4000 series terminal and the UNIVAC 1100/82. A copy of the program also resides on the Honeywell SIGMA V System.

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1.0 INTRODUCTION

1.1 PURPOSE

The STREAM program was developed for the purpose of quick retrieval of stored data in sheets. The retrieval basis is a "sheet" where "sheet" is defined to be all of the individual flow streams which comprise a given portion of a coal gasification system. A "sheet" may cover more than one page of output tables.

The sheets can be revised or deleted. Once a change has been made, this change is reflected in all of the flow streams.

The final results are displayed, one sheet at a time, in the form of a table. The program was written for the UNIVAC 1100/82 and the Univac control language is used in this document. To run the program on the Honeywell Sigma V, only the control cards need to be changed.

The STREAM Program was developed for the Computer Services Organization (AH33) in support of activities in the Coal Gasification Task Team (PF15) under NASA contract NAS8-31640.

1.2 MSFC FORM 3559

See the following page.

**USER RESOURCES PROJECTION PLAN
HUNTSVILLE COMPUTER COMPLEX**

1. NAME OF REQUESTER (24 characters): Tom French		4. NAME OF PROJECT (36 characters): TVA Coal Gasification	
2. TELEPHONE NUMBER: 453-4024	3. ORGANIZATION (4 characters): PAOL	5. PROJECT (UPN) (7 characters): 778-44-29	6. DATE OF REQUEST: 8/8/80

7. JOB NUMBER	SERIES CODE	COG. ACT.	PROJECT	SYSTEM
	-	PA	- 778 -	R 50021

8. JOB TITLE (24 characters):
TVA Coal Gasification

9. JOB DESCRIPTION (300 characters):
Provide flow sheet graphics; absorption, stripping, and distillation column design; facility and equipment sizing and plant layout; startup procedures; timelines; and analyses of: cost and economics, material and energy balance, combustion equilibrium for the TVA Coal Gasification facility.

19 81 FISCAL YEAR RESOURCES PLAN

ESTIMATED HOURS/SUPS						COST
	1ST. QTR	2ND. QTR	3RD. QTR	4TH. QTR	TOTAL	
LABOR	10. 1926	11. 1927	12. 1926	13. 1927	14. 7706	15. \$105,957.50
COMPUTER	16. 10	17. 11	18. 10	19. 11	20. 42	21. \$5,880.00

23. COMPUTER IDENTIFICATION: UNIVAC 1100	22. TOTAL COST: \$111,837.50
--	--

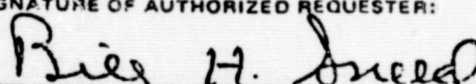
24. FUNDING SOURCE: ☐ R&PM ☐ D&O ☐ R&D ☒ REIMBURSABLE

25. WORK PACKAGE: 34X	26. TASK NUMBER	27. TASK TITLE (24 characters):
---------------------------------	-----------------	---------------------------------

28. NAME OF PROGRAMMER/ANALYST (24 characters): Mike Fague	29. NAME OF MANAGER (24 characters): Mike Fague	30. ORGANIZATION: 653
31. NAME OF MONITOR (24 characters): R. Martin	32. TELEPHONE NUMBER: 3-2294	33. ORGANIZATION: AH33

34. COMMENTS:
Scientific/Engineering

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3H <input type="checkbox"/> OVERGUIDELINES	36. SIGNATURE OF AUTHORIZED REQUESTER: 	37. DATE RECEIVED:
--	--	--------------------

1.3 RELATED PROJECTS

The Related Projects include the Timeline Resource Analysis Program (TRAP) and the CEC Lewis Program.

2.0 PROBLEM TASK DESCRIPTION

The STREAM Program is a bookkeeping program which allows the user easy access to a table of output.

The user has the option to define a new table. After a table has been defined, this existing table can be revised or deleted. One can also print existing tables with the option of printing one or all of the sheets dealing with a particular facility name, case number, and table number. Once the printing option has been selected, the user has the option to print more individual sheets and to print more tables with a different facility name, case and table number.

3.0 METHOD OF SOLUTION

The STREAM Program is designed with pointers used to output the tables. These pointers are used with three different files. The names of these files are 14, 17, and 20.

To add a new table, the user selects option one in the main menu. After this selection has been made, the user is asked to supply the facility name with an A8 format, the case number and the table number both in I1 formats. Then, this information is used for the different files. File 14 contains:

- NNAME - number of facilities
- ICOLM - pointer of columns
- ICHAIN - chain of column pointers
- TNAME - facility name
- NPTR - counter of pointers
- TCASE - case name
- TTABLE - table number
- TSHEET - sheet number

File 16 contains:

- IPTR - counter pointer to columns
- SYSNAM - system label
- DRAWN - drawn by
- ENGR - engineer's name
- APPR - approved by
- DATE is current date

of which DRAWN ENGR, APPR are optional to the output page.

File 20 contains:

- COLNAM - column name or stream number
- COLDES - stream description
- COLVAR - actual numerical data for output tables
- CXTR - component name and formula
- XTR - compound molecular weight and moles/hour

To revise, the user first has to write the facility name, case and table number. The existence of the table is verified; then, the sheet number is input and verified. After that, the original data is located. The system data can be changed by choosing that option which results in the new item being keyed in. When this is completed, the entire record is written back to file 16. Column data can then be changed in a likewise manner. To change moles/hour for the compounds, the entire column of data must be keyed in for each compound. After this process is completed, the information is written

back to file 20. The user is able to edit as much as he likes without going back to the main menu.

To delete, it is the same process of adding except in reverse. The user can delete an entire case, table, sheet and column. Once the user decides which one is to be deleted, then the respective pointers are updated.

To output tables, the user must again input the facility name, case and table number to be used as pointers to sheet data. The user can output one sheet at this time or all of the sheets if desired. If more than one sheet is desired, but not all, the user must again input the sheet number to be output. The user has the option to output more tables before returning to the main menu.

One thing to keep in mind is that the pointers used start out from the largest category down to the smallest. In this case, it is the facility name, case number, table number, sheet number and finally, the column number or name.

4.0 PROGRAM DESCRIPTION

4.1 OPERATING ENVIRONMENT

4.1.1 Hardware

- The program was first written for the UNIVAC 1100-82.
- Core Requirements
The amount of core memory required for the program to run on the UNIVAC 1100-82 is 13853.
- Magnetic Tapes
On the UNIVAC 1100/82, the number of nine track magnetic tape units required is one.
- Mass Storage Requirements for the assignment of the files:
 - (a) STREAM is catalogued:
@CAT,P CGS, F/64/TRK/128
 - (b) files 14, 16, 20 are assigned:
@CAT,P 14,F/2/TRK/4
@CAT,P 16, F/1/POS/2
@CAT,P 20, F/2/POS/4
respectively.

4.1.2 Software

- Operating System - The host operating system will be a UNIVAC 1100/82 Executive, level 9R1.
- The program is written in ASCII Fortran on the UNIVAC.
- Demand, interactive is how the processing mode used to execute
- Library Subroutines include:
SYSS*MSFC\$.

4.2 PROGRAM SPECIFICATIONS

If the user wants to retrieve information already existing, all the user needs to do is to input the facility name, case number, table number, and sheet number and the correct sheets will be displayed. But if the sheet does not exist, the user will need to define new sheet data which require stream name, stream description, moles per hour for the different compounds, special compounds, and the different totals.

4.3 SUBROUTINES

A list of all the subroutines and their main function are given below.

- 1) CHECK - checks for a duplicate column name and if found will flag as an error.
- 2) CNAME - user will input stream name, isolate multiplier and remove N, (, and).
- 3) COLUMN - write stream description and column data for compounds, special compounds, weight, temperature, pressure PSIA, gas molecular weight, power in kilowatts and BTU per hour.
- 4) CSHEET - changes sheet information which includes drawn by, engineer, approved by, and date.
- 5) DEFINE - reads in sheet data, column data and stores the information on the file.
- 6) DELETE - will delete entire facility, case, table, sheet or column data, and will update all pointers.
- 7) EDIT - user will select basic table, check existence of table, and used as a driver to change sheet and column data.
- 8) FILE - used to create a new file data to create first records, to adjust multiplier column, to write new column data and to update the chain of column pointers
- 9) INIT - defines files 14, 16, 20.
- 10) MAIN - main driver of program
- 11) MENU - main menu of program to either define new table, revise existing table, delete existing table or print selected table.
- 12) OPDATA - used if user wishes to input drawn by, the engineer's name or approved by.
- 13) OUTPUT - will display all of the related output in table form.
- 14) PSELCT - user will determine which table, sheets to be output; an option will enable him to print more sheets and tables.

- 15) SELECT - user will input facility name, case and table number.
- 16) SHEET - user will input sheet number and system label.
- 17) SHTNUM - user writes the number sheets (1-16) to be printed.

5.0 OPERATING INSTRUCTIONS

5.1 DECK SETUP

This program was designed to run interactively. Here are some of the commands that make it easier for the user.

- to copy program from tape to file

```
@RUN. . .  
@ASG,TF PUR., U9S, tape number  
@COPY,G PUR.,TPF$.  
@ADD,L BOOT
```

After this sequence, the user is able to execute the program. BOOT will catalog file CGS,14, 16, 20, will assign them to the user's run and will copy information from tape to file.

- to get on once files are copied from tape

```
@ADD,L GETON
```

will assign files to user's run once they are cataloged.

- to make hard-copy print-out of program

```
@ADD,L COPY
```

- to remap

```
@ADD,L MAP  
will pack, prep and remap
```

- to make a new tape with new information

```
@ADD,L UPDATE
```

will assign a new tape, copy information to tape, and will give you a new tape number.

- to execute program

```
@XQT XQT
```

5.1.1 Input

5.1.1.1 Magnetic Tapes

For file 14:

NNAME is dimensioned (1)	NPTR is dimensioned (4)
ICOLM is dimensioned (1)	TCASE is dimensioned (16)
ICHAIN is dimensioned (1)	TTABLE is dimensioned (32)
TNAME is dimensioned (2,4)	TSHEET is dimensioned (16,32)

For file 16, the format is:

IPTR is dimensioned (9,2)	ENGR is dimensioned (4A4)
SYSNAM is dimensioned (20A4)	APPR is dimensioned (4A4)
DRAWN is dimensioned (4A4)	DATE is dimensioned (2A4)

For file 20, the format is:

COLNAM is dimensioned (2,9)
COLDES is dimensioned (3,9,4)
COLVAR is dimensioned (36,9)
CXTR is dimensioned (6,3,9)
XTR is dimensioned (2,3,9)

The assigned tape is called STREAM and was made with a TF (labeled tape) option on the assign card. The Tape Assign Card is as follows:

@ASG,TF STREAM, U9S,SAVE04. . . CGS STREAM Table

5.1.1.2 File Requirements

The file set-up requirements are:

- 1) for file 14, the mass storage requirement is one record with a maximum length of 575 characters.
- 2) for file 16, there are 512 records, each with a maximum length of 52 characters.
- 3) For file 20, there are 5120 records, each with a maximum length of 74 characters.

5.1.1.3 Other

For all the input to be given by the user is explained in the reference test case

5.1.1.4 Sample Control Runstream

See the following page.

TO EXECUTE PROGRAM, LINES UNDEPLINED INDICATE INPUT FROM USER.

ORUN ID0010,IMP0010000,IMLESBIN00.00 000

DATE 040001 TIME 101010

>AASG TF TAP

AASG TF PUR UPS 00444

READY

>ACOPY 2 PUR

PURPUR 28R1H1 E4S74T11 04/20/81 10:15:42

SEVIGNBIN2000CGS(1) COPIED ON 01/14/81 AT 08:54:50

65 BLOCKS COPIED

EOF ENCOUNTERED ON INPUT TAPE

>AASD 1 BOOT

@CAT.P CGS.F/64/TRK/128
READY

@CAT.P 14.F/2/TRK/4
READY

@CAT.P 16.F/1/POS/2
READY

@CAT.P 20.F/2/POS/4
READY

@SG.A CGS
READY

@ASG.A 14
READY

@ASG.A 16
READY

@ASG.A 20
READY

@COPY TFFS .CGS
PURPUR 28R1H1 E36 S74T11 04/20/81 10:17:14
65 BLOCKS COPIED

@COPY.PUR .14
SEVIGNBIN200014(1) COPIED ON 01/14/81 AT 08:55:49
2 BLOCKS COPIED
EOF ENCOUNTERED ON INPT TAPE

@COPY.Q PUR .16
SEVIGNBIN200016(1) COPIED ON 01/14/81 AT 08:55:50
64 BLOCKS COPIED
EOF ENCOUNTERED ON INPUT TAPE

@COPY.G PUR .20
SEVIGNBIN200020(1) COPIED ON 01/14/81 AT 08:55:51

WAIT-LAST IF IGNORED
65S OCKS COPIED.
EOF ENCOUNTERED ON INPUT TAPE

@FREE PUR
READY

@FREE TFFS
READY

@USE TFFS..CGS
READY
>BOST XOT

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5.1.2 Output

All of the output consists of one basic output page. This is all dependent on the facility name, case name, and table case that the user desires.

5.1.2.1 Magnetic Tapes

If the user makes changes and wants to retain the change, he can make a new tape by assigning a nine track tape and copying the files to this tape.

5.1.2.2 Sample Output

(See attached Output pages).

The number of Output pages will depend on how many the user desires. After each page is printed, a pause statement will appear and will give the user a chance to look at the Output or to make a hard copy before he continues.

5.1.2.3 Other

The output is done interactively with a TEKTRONIX 4000 series terminal. After the headings are printed, a list of components with their molecular weight and abbreviations are listed. These components are then listed with the number of these components that are needed to make up the process listed in the STREAM description.

NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER
HUNTSVILLE, ALABAMA
COAL GASIFICATION TASK TEAM
COAL GASIFICATION STREAM & UTILITY TABLE

FACILITY TEXACO
CASE NO. 3

DRAWN BY
ENGR.
APPROVED

DATE 07/31/80
SHEET 8 OF 10
TABLE NO. 1

MODULE SYSTEM
STREAM NUMBER
STREAM DESCRIPTION

PRODUCT GAS USAGE
PSS
PRODUCT
QA

NAR	COMPONENT FORMULA	***** MOL-UT	LB-MOLES / HR *****
HYDROGEN	H2	2.02	10941+05
CARBON MONOXIDE	CO	28.01	15428+05
CARBON DIOXIDE	CO2	44.01	2252'
METHANE	CH4	16.04	60000+01
NITROGEN	N2	28.01	29100+03
OXYGEN	O2	32.00	
ARGON	AR	40.00	49900+03
HYDROGEN SULFIDE	H2S	34.08	17500-01
CARBONYL SULFIDE	COS	60.08	99120-02
CARBON DISULFIDE	CS2	76.14	
SULFUR DIOXIDE	SO2	64.06	
AMMONIA	NH3	17	
HYDROGEN CYANIDE	HCN	27.03	
HYDROGEN CHLORIDE	HCL	36.46	
NITROUS OXIDE	NO	30.01	
CHLORINE	CL	35.45	
ETHYLENE	C2H4	28.05	
ETHANE	C2H6	30.07	
PROPYLENE	C3H6	42.09	
PROPANE	C3H8	44.09	
SULFUR	S	32.07	
TOTAL DRY			29924+05
WATER	H2O	18.02	
TOTAL WET			29924+05

TOTAL GAS/LIQUID			59549+0

COAL			
ASH			
CARBON			
TOTAL SOLIDS			
TOTAL STREAM			59549+06
TEMPERATURE, DEG F			10000+03
PRESSURE, PSIA			88470+03
GAS/LIQ MOLE WEIGHT, LB/LB-MOL			1922
POWER, KW (BTU/HR)			
PAUSE	00000	>	

SAMPLE OUTPUT

5-5

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NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER
HUNTSVILLE, ALABAMA
COAL GASIFICATION TASK TEAM
COAL GASIFICATION STREAM & UTILITY TABLE

FACILITY TEXACO
CASE NO. 3

DRAWN BY
ENGR
APPROVED

DATE 07/31/80
SHEET 1 OF 10
TABLE NO. 1

MODULE SYSTEM
STREAM NUMBER
STREAM DESCRIPTION

899
COAL

007
PROCESS
WATER

COAL PREPARATION SYSTEM (L)
H85
LP
STEAM

L96
LP
STEAM
CONDEN-
SATE

S99
H2

L97
H2
VENT

E99
POWER

L99 1- 3
COAL
SLURRY

NAME	COMPONENTS FORMULA	MOL-WT
HYDROGEN	H2	2 02
CARBON MONOXIDE	CO	28 01
CARBON DIOXIDE	CO2	44 01
METHANE	CH4	16 04
NITROGEN	N2	28 01
OXYGEN	O2	32 00
ARGON	AR	40 00
HYDROGEN SULFIDE	H2S	34 08
CARBONYL SULFIDE	COS	60 08
CARBON DISULFIDE	CS2	76 14
SULFUR DIOXIDE	SO2	64 06
AMMONIA	NH3	17 03
HYDROGEN CYANIDE	HCN	27 03
HYDROGEN CHLORIDE	HCL	36 46
NITROUS OXIDE	NO	30 01
CHLORINE	CL	35 45
ETHYLENE	C2H4	28 05
ETHANE	C2H6	30 07
PROPYLENE	C3H6	42 09
PROPANE	C3H8	44 09
SULFUR	S	32 07

***** LB - MOLES / HR *****

16667+05 16667+05
89000+02 89000+02

TOTAL DRY					16756+05	16756+05	
WATER	H2O	18 02	21250+04	11210+05	27630+04	27630+04	44440+04
TOTAL WET			21250+04	11210+05	27630+04	27630+04	44440+04
TOTAL GAS/LIQUID			38256+05	20170+06	49730+05	49730+05	80000+05
COAL			40000+06				13333+06
ASH							
CARBON							
TOTAL SOLIDS			40000+06	20170+06	49730+05	49730+05	20000+03
TOTAL STREAM			43830+06				21333+06
TEMPERATURE, DEG F			30000+02	10000+03	29000+03	29000+03	20000+03
PRESSURE, PSIA				14700+02	64700+02	64700+02	21700+02
GAS/LIQ MOLE WEIGHT, LB/LB-MOL				18000+02	18000+02	18000+02	25020+02
POWER, KW (BTU/HR)							

PAUSE 00000 >

FOR
FACILITY NAME - TEXACO
CASE NUMBER - 3
TABLE NUMBER - 1
SHEETS - 11

SAMPLE OUTPUT

NASA GEORGE C MARSHALL SPACE FLIGHT CENTER
HUNTSVILLE, ALABAMA
COAL GASIFICATION TASK TEAM
COAL GASIFICATION STREAM & UTILITY TABLE

FACILITY TEXACO
CASE NO 3

DRAWN BY
ENGR
APPROVED

DATE 07/31/80
SHEET 2 OF 10
TABLE NO. 1

MODULE SYSTEM
STREAM NUMBER
STREAM DESCRIPTION

Z99
AIR

H98
HP
STEAM

AIR SEPARATION SYSTEM (S)
S96
HP
STEAM
CONDEN-
SATE

J87
COOLING
WATER

S95
COOLING
WATER

S94
WASTE
H2

S90
H2

S98
O2

LB - MOLES / HR

NAME	COMPONENTS FORMULA	MOL-WT
HYDROGEN	H2	2.02
CARBON MONOXIDE	CO	28.01
CARBON DIOXIDE	CO2	44.01
METHANE	CH4	16.04
NITROGEN	N2	28.01
OXYGEN	O2	32.00
ARGON	AR	40.00
HYDROGEN SULFIDE	H2S	34.08
CARBONYL SULFIDE	COS	60.08
CARBON DISULFIDE	CS2	76.14
SULFUR DIOXIDE	SO2	64.06
AMMONIA	NH3	17.03
HYDROGEN CYANIDE	HCN	27.03
HYDROGEN CHLORIDE	HCL	36.46
NITROUS OXIDE	NO	30.01
CHLORINE	CL	35.45
ETHYLENE	C2H4	28.05
ETHANE	C2H6	30.07
PROPYLENE	C3H6	42.09
PROPANE	C3H8	44.09
SULFUR	S	32.07

XXXXXXXXXXXXXXXXXXXX

30280+05	16667+05	86880+02
75300+03	89000+02	11756+05
27000+02		53300+03

TOTAL DRY		60190+05					31060+05	16756+05	12375+05
WATER	H2O	18.02	32020+05	32020+05	29500+07	29500+07	31060+05	16756+05	12375+05
TOTAL WET		60190+05	32020+05	32020+05	29500+07	29500+07	31060+05	16756+05	12375+05
TOTAL GAS/LIQUID		17430+07	57633+06	57633+06	53100+08	53100+08	87310+06	46950+06	39850+06
COAL									
ASH									
CARBON									
TOTAL SOLIDS		17430+07	57633+06	57633+06	53100+08	53100+08	87310+06	46950+06	39850+06
TOTAL STREAM									
TEMPERATURE, DEG F		60000+02	10000+04	10200+03	83000+02	10300+03	80000+02	13500+03	22100+03
PRESSURE, PSIA		14700+02	12997+04	10000+01	99700+02		16700+02	21700+02	91470+03
GAS/LIQ MOLE WEIGHT, LB/LB-MOL		28950+02	18000+02	18000+02	18000+02	18000+02	28110+02	28020+02	32300+02
POWER, KW (BTU/HR)									

PAUSE 00000 >

NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER
HUNTSVILLE, ALABAMA
COAL GASIFICATION TASK TEAM
COAL GASIFICATION STREAM & UTILITY TABLE

FACILITY TEXACO
CASE NO 3

DRAWN BY
ENGR
APPROVED

DATE 07/31/80
SHEET 3 OF 10
TABLE NO 1

MODULE SYSTEM
STREAM NUMBER
STREAM DESCRIPTION

L99 1-3
COAL
SLURRY

S98
O2

M97
HP
BFW

GASIFICATION SYSTEM (M)

M93
BFW
B/D

M98
HP
STEAM

J97
SLAG
QUENCH
WATER

M99
SLAG

M95 1-3
RAU
GAS

NAME	COMPONENTS FORMULA	MOL-WT	***** LB - MOLES / HR *****									
HYDROGEN	H2	2 02										
CARBON MONOXIDE	CO	28 01										
CARBON DIOXIDE	CO2	44 01									37600+04	
METHANE	CH4	16 04									54800+04	
NITROGEN	N2	28 01									18240+04	
OXYGEN	O2	32 00		86000+02							20000+01	
ARGON	AR	40 00		11756+05							10000+03	
HYDROGEN SULFIDE	H2S	34 08		53300+03								
CARBONYL SULFIDE	COS	60 08									17000+03	
CARBON DISULFIDE	CS2	76 14									16100+03	
SULFUR DIOXIDE	SO2	64 06									80000+01	
AMMONIA	NH3	17 03										
HYDROGEN CYANIDE	HCN	27 03										
HYDROGEN CHLORIDE	HCL	36 46										
NITROUS OXIDE	NO	30 01										
CHLORINE	CL	35 45									50000+01	
ETHYLENE	C2H4	28 05										
ETHANE	C2H6	30 07										
PROPYLENE	C3H6	42 09										
PROPANE	C3H8	44 09										
SULFUR	S	32 07										

TOTAL DRY												
WATER	H2O	18 02	44440+04	12375+05	37850+05	15140+04	36340+05	81110+04	26840+04	11524+05		
TOTAL WET			44440+04	12375+05	37850+05	15140+04	36340+05	81110+04	26840+04	54710+04		
TOTAL GAS/LIQUID			*****	*****	*****	*****	*****	*****	*****	*****		
COAL			80000+05	39850+06	68130+06	27250+05	65405+06	14600+06	48311+05	16995+05		
ASH			13333+06							35621+06		
CARBON												
TOTAL SOLIDS			13333+06							46240+04		
TOTAL STREAM			21333+06	39850+06	68130+06	27250+05	65405+06	14600+06	48311+05	16200+04		
TEMPERATURE, DEG F										62440+04		
PRESSURE, PSIA			20000+03	22100+03	20000+03	59200+03	59200+03	88000+02	15300+03	36245+06		
GAS/LIQ MOLE WEIGHT, LB/LB-MOL			91470+03	91470+03	20497+04	14497+04	14497+04	77470+03	76470+03			
POWER, KW (BTU/HR)				32300+02	18000+02	18000+02	18000+02	18000+02		45500+03		
										71470+03		
										20960+02		

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NASA GEORGE C MARSHALL SPACE FLIGHT CENTER
MUNTSVILLE, ALABAMA
COAL GASIFICATION TASK TEAM
COAL GASIFICATION STREAM & UTILITY TABLE

FACILITY TEXACO
CASE NO. 3

DRAWN BY
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DATE 07/31/80
SHEET 4 OF 10
TABLE NO. 1

MODULE SYSTEM
STREAM NUMBER
STREAM DESCRIPTION

GAS CLEANUP AND COOLING SYSTEM (N)
MPS 1-3 J96 N90 N99
RAW PROCESS ASH RAW
GAS WATER AND GAS
WATER

NAME	COMPONENTS FORMULA	MOL-WT	***** LB-MOLES / HR *****			
HYDROGEN	H2	2.02	37600+04	33700+03	10043+66	
CARBON MONOXIDE	CO	28.01	54800+04	52800+03	15936+05	
CARBON DIOXIDE	CO2	44.01	18240+04	30950+04	23750+04	
METHANE	CH4	16.04	20000+01		60000+01	
NITROGEN	N2	28.01	10000+03	00000+01	29100+03	
OXYGEN	O2	32.00				
ARGON	AR	40.00	17800+03	35000+02	49000+03	
HYDROGEN SULFIDE	H2S	34.08	16100+03	38800+03	95000+02	
CARBONYL SULFIDE	COS	60.08	80000+01	10000+02	14000+02	
CARBON DISULFIDE	CS2	76.14				
SULFUR DIOXIDE	SO2	64.06				
AMMONIA	NH3	17.03				
HYDROGEN CYANIDE	HCN	27.03				
HYDROGEN CHLORIDE	HCL	36.46	50000+01	15000+02		
NITROUS OXIDE	NO	30.01				
CHLORINE	CL	35.45				
ETHYLENE	C2H4	28.05				
ETHANE	C2H6	30.07				
PROPYLENE	C3H6	42.09				
PROPANE	C3H8	44.09				
SULFUR	S	32.07				
TOTAL DRY			11524+05	44180+04	30160+05	
WATER	H2O	18.02	54710+04	19830+07	19990+07	44000+02
TOTAL WET			16995+05	19830+07	20030+07	30200+05

TOTAL GAS/LIQUID			35621+06	35730+08	36060+08	60590+06
COAL						
ASH			46240+04		13870+05	
CARBON			16200+04		48600+04	
TOTAL SOLIDS			62440+04		18730+05	
TOTAL STREAM			36245+06	35730+08	36080+08	60590+06
TEMPERATURE, DEG F			45500+03	88000+02	10000+03	10000+03
PRESSURE, PSIA			71470+03	76470+03	66470+03	66470+03
GAS/LIQ MOLE WEIGHT, LB/LB-MOL			20060+02	18000+02	18020+02	20100+02
POWER, KW (BTU/HR)						

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NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER
HUNTSVILLE, ALABAMA
COAL GASIFICATION TASK TEAM
COAL GASIFICATION STREAM & UTILITY TABLE

FACILITY TEXACO
CASE NO 3

DRAWN BY
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DATE 07/31/80
SHEET 5 OF 10
TABLE NO 1

MODULE SYSTEM STREAM NUMBER STREAM DESCRIPTION			P99 SLAG	M98 ASH AND WATER	P86 SOUR WATER CONDEN- SATE	T98 SOUR WATER CONDEN- SATE	Q99 CLARIFIED WATER	Q98 ASH/ SLAG SLURRY	Q97 PROCESS WATER	Q94 ACID GAS
COMPONENTS NAME FORMULA			***** L B - MOLES / HR *****							
MOL-WT										
HYDROGEN	H2	2.02		33700+03						33700+03
CARBON MONOXIDE	CO	28.01		52800+03						52800+03
CARBON DIOXIDE	CO2	44.01		30960+04						30960+04
METHANE	CH4	16.04								
NITROGEN	N2	28.01		90000+01						90000+01
OXYGEN	O2	32.00								
ARGON	AR	40.00		35000+02						35000+02
HYDROGEN SULFIDE	H2S	34.08		38800+03						38800+03
CARBONYL SULFIDE	COS	60.08		10000+02						10000+02
CARBON DISULFIDE	CS2	76.14								
SULFUR DIOXIDE	SO2	64.06								
AMMONIA	NH3	17.03								
HYDROGEN CYANIDE	HCN	27.03								
HYDROGEN CHLORIDE	HCL	36.46		15000+02			15000+02			
NITROUS OXIDE	NO	30.01								
CHLORINE	CL	35.45								
ETHYLENE	C2H4	28.05								
ETHANE	C2H6	30.07								
PROPYLENE	C3H6	42.09								
PROPANE	C3H8	44.09								
SULFUR	S	32.07								
METHANOL	CH3OH	32.00			14300+02		14300+02			
TOTAL DRY				44180+04	14300+02		29000+02			44030+04
WATER	H2O	18.02	26840+04	19990+07	44000+02	56200+03	19880+07	27830+04	11210+05	30400+03
TOTAL WET			26840+04	20030+07	58000+02	56200+03	19880+07	27830+04	11210+05	47070+04
TOTAL GAS/LIQUID			*****	*****	*****	*****	*****	*****	*****	*****
COAL			48311+05	36060+08	12480+04	10116+05	35790+08	50100+05	20170+06	17260+05
ASH				13870+05				67040+05		
CARBON				48600+04						
TOTAL SOLIDS			48311+05	18730+05				67040+05		
TOTAL STREAM			96620+05	36080+08	12480+04	10116+05	35790+08	11714+06	20170+06	17260+05
TEMPERATURE, DEG F			15300+03	10000+03	14900+03	10000+03	10000+03	10000+03	10000+03	10000+03
PRESSURE, PSIA			76470+03	66470+03	14700+02	14700+02	14700+02	14700+02	14700+02	14700+02
GAS/LIQ MOLE WEIGHT, LB/LB-MOL				18020+02	23100+02	18000+02	18000+02	18000+02	18000+02	36700+02
POWER, KW (BTU/HR)										

PAUSE 00000 >

NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER
HUNTSVILLE, ALABAMA
COAL GASIFICATION TASK TEAM
COAL GASIFICATION STREAM & UTILITY TABLE

FACILITY TEXACO
CASE NO. 3

DRAWN BY
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DATE 07/31/80
SHEET 6 OF 10
TABLE NO. 1

MODULE SYSTEM
STREAM NUMBER
STREAM DESCRIPTION

H99
RAW
GAS

J86
COOLING
WATER

P96
COOLING
WATER

ACID GAS REMOVAL SYSTEM (P)
Z95
SOLVENT
MAKEUP

E96
POWER

P86
SOUR
WATER
CONDEN-
SATE

P96
ACID
GAS

H95
LP
STEAM

P91
LP
STEAM
CONDEN-
SATE

NAME	COMPONENTS FORMULA	MOL-WT	***** LB - MOLES / HR *****									
HYDROGEN	H2	2.02	10043+05							20000+01		
CARBON MONOXIDE	CO	28.01	15936+05							80000+01		
CARBON DIOXIDE	CO2	44.01	23760+04							11700+03		
METHANE	CH4	16.04	60000+01									
NITROGEN	N2	28.01	29100+03									
OXYGEN	O2	32.00										
ARGON	AR	40.00	49000+03									
HYDROGEN SULFIDE	H2S	34.08	95000+02							95000+02		
CARBONYL SULFIDE	COS	60.08	14000+02							14000+02		
CARBON DISULFIDE	CS2	76.14										
SULFUR DIOXIDE	SO2	64.06										
AMMONIA	NH3	17.03										
HYDROGEN CYANIDE	HCN	27.03										
HYDROGEN CHLORIDE	HCL	36.46										
NITROUS OXIDE	NO	30.01										
CHLORINE	CL	35.45										
ETHYLENE	C2H4	28.05										
ETHANE	C2H6	30.07										
PROPYLENE	C3H6	42.09										
PROPANE	C3H8	44.09										
SULFUR	S	32.07										
METHANOL	CH3OH	32.00				14300+02			14300+02			
TOTAL DRY			30160+05			14300+02			14300+02	23600+03		
WATER	H2O	18.02	44000+02	36625+06	36625+06				44000+02		88880+04	88880+04
TOTAL WET			30200+05	36625+06	36625+06	14300+02			58000+02	23600+03	88880+04	88880+04
TOTAL GAS/LIQUID			*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
COAL			60590+06	65930+07	65930+07	45600+03			12480+04	94460+04	16000+06	16000+06
ASH												
CARBON												
TOTAL SOLIDS												
TOTAL STREAM			60590+06	65930+07	65930+07	45600+03			12480+04	94460+04	16000+06	16000+06
TEMPERATURE DEG F			10000+03	88000+02	12000+03	60000+02			14000+03	18000+03	29000+03	29000+03
PRESSURE PSIA			66470+03	99700+02	14700+02	66470+03			14700+02	14700+02	64700+02	64700+02
GAS/LIQ MOLE WEIGHT LB/LB-MOL			20100+02	18000+02	18000+02	32000+02			23100+02	38500+02	18000+02	18000+02
POWER KW (BTU/HR)							64630+04					

PAUSE 00000 >

NASA GEORGE C. MARSHALL SPACE FLIGHT CENTER
HUNTSVILLE, ALABAMA
COAL GASIFICATION TASK TEAM
COAL GASIFICATION STREAM & UTILITY TABLE

FACILITY TEXACO
CASE NO. 3

DRAWN BY
ENGR
APPROVED

DATE 07/31/80
SHEET 7 OF 10
TABLE NO. 1

MODULE SYSTEM ACID GAS REMOVAL SYSTEM (P) CONT.
STREAM NUMBER P99
STREAM DESCRIPTION PRODUCT GAS

COMPONENTS			***** LB - MOLES / HR *****	
NAME	FORMULA	MOL-WT		
HYDROGEN	H2	2.02	10941+05	
CARBON MONOXIDE	CO	28.01	15928+05	
CARBON DIOXIDE	CO2	44.01	22592+04	
METHANE	CH4	16.04	60000+01	
NITROGEN	N2	28.01	29100+03	
OXYGEN	O2	32.00		
ARGON	AR	40.00	49900+03	
HYDROGEN SULFIDE	H2S	34.08	17500+01	
CARBONYL SULFIDE	COS	60.08	99120+02	
CARBON DISULFIDE	CS2	76.14		
SULFUR DIOXIDE	SO2	64.06		
AMMONIA	NH3	17.03		
HYDROGEN CYANIDE	HCN	27.03		
HYDROGEN CHLORIDE	HCL	36.46		
NITROUS OXIDE	NO	30.01		
CHLORINE	CL	35.45		
ETHYLENE	C2H4	28.05		
ETHANE	C2H6	30.07		
PROPYLENE	C3H6	42.09		
PROPANE	C3H8	44.09		
SULFUR	S	32.07		

TOTAL DRY 29924+05
WATER H2O 18.02

TOTAL WET 29924+05

TOTAL GAS/LIQUID 59549+06

COAL

ASH

CARBON

TOTAL SOLIDS 59549+06
TOTAL STREAM

TEMPERATURE, DEG F 10000+03

PRESSURE, PSIA 86470+03

GAS/LIQ MOLE WEIGHT, LB/LB-MOL 19900+02

POWER, KW (BTU/HR)

PAUSE 00000 >

DATE 07/31/00
SHEET 8 OF 10
TABLE NO. 1

MODULE SYSTEM STREAM NUMBER STREAM DESCRIPTION	PRODUCT GAS USAGE PSG PRODUCT GAS
--	--

COMPONENTS		MOL-WT		LB - MOLES / HR	
NAME	FORMULA				
HYDROGEN	H2	2.02	10941+05		
CARBON MONOXIDE	CO	28.01	15922+05		
CARBON DIOXIDE	CO2	44.01	22500+04		
METHANE	CH4	16.04	60000+01		
NITROGEN	N2	28.01	29100+03		
OXYGEN	O2	32.00			
ARGON	AR	40.00	49000+03		
HYDROGEN SULFIDE	H2S	34.08	17500-01		
CARBONYL SULFIDE	COS	60.08	99120-02		
CARBON DISULFIDE	CS2	76.14			
SULFUR DIOXIDE	SO2	64.06			
AMMONIA	NH3	17.03			
HYDROGEN CYANIDE	HCM	27.03			
HYDROGEN CHLORIDE	HCL	36.46			
NITROUS OXIDE	NO	30.01			
CHLORINE	CL	35.45			
ETHYLENE	C2H4	28.05			
ETHANE	C2H6	30.07			
PROPYLENE	C3H6	42.09			
PROPANE	C3H8	44.09			
SULFUR	S	32.07			

TOTAL DRY				29924+05
WATER	N20	18.02		

TOTAL NET 18.02 29924+05

TOTAL GAS/LIQUID 59549+06 LBS / HR

COAL

ASH

CARBON

TOTAL SOLIDS

TOTAL STREAM

59549+06

TEMPERATURE, DEG F

PRESSURE, PSIA

GAS/LIQ MOLE WEIGHT, LB/LB-MOL

POWER, KW (BTU/HR)

PAUSE 00000 >

5-13

NASA GEORGE C MARSHALL SPACE FLIGHT CENTER
HUNTSVILLE, ALABAMA
COAL GASIFICATION TASK TEAM
COAL GASIFICATION STREAM & UTILITY TABLE

FACILITY TEXACO
CASE NO 3

DRAWN BY
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DATE 07/31/80
SHEET 9 OF 10
TABLE NO 1

MODULE SYSTEM
STREAM NUMBER
STREAM DESCRIPTION

P96
ACID
GAS

Q94
ACID
GAS

SULFUR RECOVERY AND TAIL GAS TREATMENT (T)
H96 LP STEAM T94 LP STEAM CONDENSATE
J95 COOLING WATER T93 COOLING WATER
H89 LP BFW T96 LP STEAM Z97 AIR

NAME	COMPONENTS FORMULA	MOL-UT	***** LB - MOLES / HR *****									
HYDROGEN	H2	2 02	20000+01	33700+03								
CARBON MONOXIDE	CO	28 01	80000+01	52000+03								
CARBON DIOXIDE	CO2	44 01	11700+03	30960+04								
METHANE	CH4	16 04										
NITROGEN	N2	28 01										
OXYGEN	O2	32 00		90000+01								
ARGON	AR	40 00										15060+04
HYDROGEN SULFIDE	H2S	34 08	95000+02	35000+02								42000+03
CARBONYL SULFIDE	COS	60 08	14000+02	38000+03								19000+02
CARBON DISULFIDE	CS2	76 14		10000+02								
SULFUR DIOXIDE	SO2	64 06										
AMMONIA	NH3	17 03										
HYDROGEN CYANIDE	HCN	27 03										
HYDROGEN CHLORIDE	HCL	36 46										
NITROUS OXIDE	NO	30 01										
CHLORINE	CL	35 45										
ETHYLENE	C2H4	28 05										
ETHANE	C2H6	30 07										
PROPYLENE	C3H6	42 09										
PROPANE	C3H8	44 09										
SULFUR	S	32 07										

TOTAL DRY			23600+03	44030+04								
WATER	H2O	18 02		30400+03	20300+03	20300+03	15205+05	15285+05	56320+04	54070+04	20430+04	
TOTAL WET			23600+03	47070+04	20300+03	20300+03	15205+05	15285+05	56320+04	54070+04	26000+02	
TOTAL GAS/LIQUID			*****	*****	*****	*****	*****	*****	*****	*****	*****	
COAL			94460+04	17260+05	36480+04	36480+04	27512+06	27512+06	10137+06	97317+05	59629+05	
ASH												
CARBON												
TOTAL SOLIDS												
TOTAL STREAM			94460+04	17260+05	36480+04	36480+04	27512+06	27512+06	10137+06	97317+05	59629+05	
TEMPERATURE, DEG F			10000+03	10000+03	29800+03	29800+03	88000+02	12000+03	20000+03	29800+03	60000+02	
PRESSURE, PSIA			14700+02	14700+02	64700+02	64700+02	99700+02	14700+02	15970+03	64700+02	18700+02	
GAS/LIQ MOLE WEIGHT, LB/LB-MOL			30600+02	36700+02	18000+02	18000+02	18000+02	18000+02	18000+02	18000+02	28200+02	
POWER, KW (BTU/HR)												

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NASA GEORGE C MARSHALL SPACE FLIGHT CENTER
HUNTSVILLE, ALABAMA
COAL GASIFICATION TASK TEAM
COAL GASIFICATION STREAM & UTILITY TABLE

FACILITY TEXACO
CASE NO. 3

DRAWN BY
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SHEET 10 OF 10
TABLE NO. 1

MODULE SYSTEM
STREAM NUMBER
STREAM DESCRIPTION

SULFUR RECOVERY AND TAIL GAS TREATMENT (T) CONT
E94 T95 T91 T98 T97
POWER VENT BFW SOUR Sulfur
DEMAND GAS SLUDGE WATER
CONDEN-
SATE

NAME	COMPONENTS FORMULA	MOL-UT	LB - MOLES / HR				
HYDROGEN	H2	2 02					
CARBON MONOXIDE	CO	28 01	20200+03				
CARBON DIOXIDE	CO2	44 01	31700+03				
METHANE	CH4	16 04	34560+04				
NITROGEN	N2	28 01					
OXYGEN	O2	32 00	16050+04				
ARGON	AR	40 00					
HYDROGEN SULFIDE	H2S	34 08	54000+02				
CARBONYL SULFIDE	COS	60 08	22200+01				
CARBON DISULFIDE	CS2	76 14					
SULFUR DIOXIDE	SO2	64 06					
AMMONIA	NH3	17 03					
HYDROGEN CYANIDE	HCN	27 03					
HYDROGEN CHLORIDE	HCL	36 46					
NITROUS OXIDE	NO	30 01					
CHLORINE	CL	35 45					
ETHYLENE	C2H4	28 05					
ETHANE	C2H6	30 07					
PROPYLENE	C3H6	42 09					
PROPANE	C3H8	44 09					
SULFUR	S	32 07					50700+03
TOTAL DRY							
WATER	H2O	18 02	56340+04				50700+03
TOTAL WET			38900+03	22500+03	56200+03		50700+03
TOTAL GAS/LIQUID			60230+04	22500+03	56200+03		50700+03
COAL			21544+06	40550+04	10116+05		16224+05
ASH							
CARBON							
TOTAL SOLIDS							
TOTAL STREAM			21544+06	40550+04	10116+05		16224+05
TEMPERATURE, DEG F			10000+03	20000+03	10000+03		20000+03
PRESSURE, PSIA			14700+02	64700+02	14700+02		15700+02
GAS/LIQ MOLE WEIGHT, LB/LB-MOL			25000+02	18000+02	18000+02		32000+02
POWER, KW (BTU/HR)		34000+02					

PAUSE 00000 >

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5.1.3 Test Case

To execute the program:

@XQT XQT

Once this has happened, a Stream and Utility Table Menu appears with the following options:

- 1) Define New Table
- 2) Revise Existing Table
- 3) Delete Existing Table
- 4) Print Selected Table
- 5) Save Revision

- 1) If the user chooses to define a new table, he chooses option number one. Then, the user is asked to write the facility name in an A8 format, the case number and table number, both in an I1 format. The user is then asked to write the sheet number in an I2 format with leading zeroes. If the user wants sheet number two, he must insert '02' and not just 2. A two will give user sheet number 20. The user is asked to give the data in format MM/DD/YY. The System Label is to be written in an A76 format. There are two asterisks given to define the limits of the system label.

An answer of 'YES' will allow the user to put optional data in. The optional data includes 'drawn by,' 'engineer's name' and 'approved by'. A return of the carriage will allow the user to skip these questions.

Next, the stream name will be asked for in an A8 format. A stream description will be asked for in the form of four lines with a maximum of 9 characters per line. Again, the limits of the nine characters per line are indicated by two asterisks. Centering of each line is not needed for the line because the program itself will take care of the centering of lines for the user.

Finally, the user is asked for the moles per hour for the twenty-one compounds in a F-type format. If a zero is wanted, all the user has to do is to hit the carriage return. If the user wants to use special compounds, answer yes. A carriage return will allow the user to bypass the questions. If special compounds are required, the user needs to input the compound name in an A16 format, compound formula in an A8 format, the compound molecular weight in any F-type format, and moles per hour in any F-type format. This loop is continued until the user desires no more special compounds. The last information is the totals, temperature, pressure PSIA, gas molecular weight and power kilowatt BTU per hour.

At this time, the user can input more column data and the process will start over. If not, the user can input more column, sheet data or can even input a new facility name, case name, and table name. If all of the answers are no, then the user returns to the main menu.

- 2) To revise existing tables, the user again is asked to input facility name, case number, table number, and sheet number. If the sheet number is less than 10, the user is required to use leading zeroes.

The user can then change the system name, drawn by name, engineer's name, approved by, or change the data. If none of the above require a change, the user will continue. If the user wants to change a particular column, he will insert the column number which he wants. The system will ask him to write the desired information again.

If the user wants to continue, the names of the columns are listed. The user will write the number of the column to be changed in I1 format. Then, the user will write the stream name in an A8 format. After a match is found, the following information is then changed: the stream description, the moles/hour for the compounds, special components, and conditions. The user does not have an option to change any part of it, but has to input all of the information.

The user has the choices to change more column data, sheet data or the change facility name/case/table.

- 3) To delete existing data, the user has a choice of deleting the entire facility, case, table, sheet or column. After the user has decided upon which one he desires, the program will remove name and update all of the pointers. The user will continue and can delete as many columns, sheets, tables, cases or facility names.
- 4) To output the tables, the user has to first input the facility name, case number, and table number. The user must know the sheet number to be printed. Again, if the sheet number is less than 10, leading zeroes must be used. If all of the sheets are to be printed dealing with that facility name, case number, and table number, the user needs to input a 99. The user has the option to print more individual sheets or to process more tables.

5.1.3.1 Test Case Listing

See the following pages.



STREAM AND UTILITY TABLE MENU

- 1 - DEFINE NEW TABLE
- 2 - REVISE EXISTING TABLE
- 3 - DELETE EXISTING TABLE
- 4 - PRINT SELECTED TABLE
- 5 - SAVE REVISION

PRESS RETURN TO EXIT

INPUT CHOICE IN I1 FORMAT

4

WRITE FACILITY NAME IN A8 FORMAT
>EXACO
WRITE CASE NUMBER IN I1 FORMAT
>3
WRITE TABLE NUMBER IN I1 FORMAT
>1
WRITE SHEET(1-16) NUMBER TO BE PRINTED IN I8 FORMAT. USING LEADING ZEROS
USE 99 IF ALL SHEETS ARE REQUIRED
>99

OPTION TO PRINT
THE SELECTED TABLES

CALLER PASSED 03 ARGUMENTS. SUBPROGRAM EXPECTS 04 ARGUMENTS

WRITE FACILITY NAME IN A8 FORMAT

>EAMCO

WRITE CASE NUMBER IN I1 FORMAT

>3

WRITE TABLE NUMBER IN I1 FORMAT

>1

WRITE SHEET NUMBER IN I2 FORMAT WITH LEADING ZEROES

>01

1 - CHANGE SYSTEM NAME

2 - CHANGE "DRAIN BY" NAME

3 - CHANGE "ENGR" NAME

4 - CHANGE "APPR" NAME

5 - CHANGE DATE

0 - RETURN TO CONTINUE

>0

641	642	643	644	645	646	647	648	0
1	1	1	1	1	1	1	1	1

1895

2097

3485

4196

5599

6197

7E99

8199 1- 3

WRITE NUMBER OF COLUMN TO BE CHANGED IN I1 FORMAT

>3

WRITE STREAM NAME IN A8 FORMAT

>H85

MATCH AT 643

WRITE STREAM DESCRIPTION IN 4 LINES OF 9 CHARACTERS EACH
WITHIN THE LIMITS INDICATED

>

>LP

>STEAM

>

>

WRITE THE MOLES/HR FOR THE FOLLOWING COMPOUNDS IN F-TYPE FORMAT.
ZEROES MAY BE ENTERED AS BLANKS

H2

>

CO

>

CO2

>

CH4

>

N2

>

O2

>

AR

>

H2S

>

CO5

>

CS2

>

TO CHANGE EXISTING DATA; IN THIS CASE,
COLUMN DATA WAS CHANGED

> SO2
 > NH3
 > MCN
 > MCL
 > HC
 > CL
 > C2H4
 > C2H6
 > C3H6
 > C3H8
 > S
 > ANSWER YES IF SPECIAL COMPOUNDS ARE REQUIRED
 > TOTL DRY
 > M20
 >2763 TOTL WET
 >2763 TOTL GAS
 >49730 COAL
 > ASH
 > CARBON
 > TOT SLDS
 > TOT STRM
 >49730
 WRITE FOLLOWING CONDITIONS IN ANY F-TYPE FORMAT
 ZEROES MAY BE ENTERED A BLANKS
 TEMP DEG. F
 >298 PRES PSIA
 >64 7 GAS MOL-WT
 >18 POWER KW(+) BTU/HR(-)
 > WRITE NUMBER OF COLUMN TO BE CHANGED IN I1 FORMAT
 >0 ANSWER YES TO EDIT MORE SHEET DATE
 > ANSWER YES TO EDIT NEW FACILITY NAME/CASE/TABLE
 >

1 - DELETE ENTIRE FACILITY
 2 - DELETE ENTIRE CASE
 3 - DELETE ENTIRE TABLE
 4 - DELETE ENTIRE SHEET
 5 - DELETE ENTIRE COLUMN
 RETURN TO CONTINUE

WRITE CHANGE TYPE IN I1 FORMAT
 >5
 WRITE FACILITY NAME IN A8 FORMAT
 >TEXT
 WRITE CASE NUMBER IN I1 FORMAT
 >3
 WRITE TABLE NUMBER IN I1 FORMAT
 >1
 WRITE SHEET NUMBER IN I2 FORMAT WITH LEADING ZEROS
 >01

1899
 2057
 3485
 4196
 5599
 6197
 7299
 8199 1- 3

WRITE NUMBER OF THE COLUMN TO BE DELETED USING I1 FORMAT

>3 ANSWER YES TO DELETE MORE COLUMNS

>
 65224 641 642 0 644 645 646 647 648 0 1 1 1 1 1 1 1 1 1

1 - DELETE ENTIRE FACILITY
 2 - DELETE ENTIRE CASE
 3 - DELETE ENTIRE TABLE
 4 - DELETE ENTIRE SHEET
 5 - DELETE ENTIRE COLUMN
 RETURN TO CONTINUE

> WRITE CHANGE TYPE IN I1 FORMAT

>

TO DELETE, IN THIS EXAMPLE AN ENTIRE
 COLUMN WAS DELETED.


```

WRITE FACILITY NAME IN A8 FORMAT
>EAC0
WRITE CASE NUMBER IN I1 FORMAT
>1
WRITE TABLE NUMBER IN I1 FORMAT
>1
WRITE SHEET NUMBER IN I2 FORMAT WITH LEADING ZEROES
>J2
WRITE STREAM NAME IN A8 FORMAT
>-23
WRITE STREAM DESCRIPTION IN 4 LINES OF 9 CHARACTERS EACH
  WITHIN THE LIMITS INDICATED

```

```

      8      8
>TEST
>CASE
>
>  WRITE THE MOLES/HR FOR THE FOLLOWING COMPOUNDS IN F-TYPE FORMAT.
>    ZEROES MAY BE ENTERED AS BLANKS
>    H2
>    CO
>    CO2
>    CH4
>    N2
>    O2
>    AP
>    H2S
>    COS
>    CS2
>    SO2
>    NH3
>    HCN
>    HCL
>    NO
>    CL
>    C2H4
>    C2H6
>    C3H8
>    C3H6
>    8
>

```

```

ANSWER YES IF SPECIAL COMPOUNDS ARE REQUIRED
> YES
WRITE COMPOUND NAME IN A18 FORMAT
> EST
WRITE COMPOUND FORMULA IN A8 FORMAT
> C24
WRITE COMPOUND MOLECULAR WEIGHT IN ANY F-TYPE FORMAT
> 23
WRITE MOLES/HR IN ANY F-TYPE FORMAT
>
ANSWER YES IF SPECIAL COMPOUNDS ARE REQUIRED
>
TOTL DRY
>
M20
>
TOTL WET
>
TOTL GAS
>
COAL
>
ASH
>
CARBON
>
TOT SLDS
>
TOT STRM
>
WRITE FOLLOWING CONDITIONS IN ANY F-TYPE FORMAT.
ZEROS MAY BE ENTERED A BLANKS
TEMP DEG. F
>
PRES PSIA
>
GAS MOL-WT
>
POWER KW(+) BTU/HR(-)
>
651 652 653 654 655 656 646 658 659
1 1 1 1 1 1 1 1 1
65 66 67 68 69 70 71 72 73 74 0 0 0 0 0 0
2 5
ANSWER YES TO INPUT MORE COLUMN DATA
>
ANSWER YES TO INPUT MORE SHEET DATA
>
ANSWER YES TO INPUT NEW FACILITY NAME/CASE/TABLE
>

```

6.0 SOURCE CODE LISTING

See the following pages.

SSSSSSSS	TTTTTTTTTT	RRRRRRRRR	EEEEEEEEEE	AAAAAAA	MM	MM
SSSSSSSSSS	TTTTTTTTTTT	RRRRRRRRRR	EEEEEEEEEE	AAAAAAAAA	MMM	MMM
SS SS	TT	RR RR	EE	AA AA	MMMM	MMMM
SSS SS	TT	RR RR	EE	AA AA	MMMMM	MMMMM
SSS	TT	RR RR	EE	AA AA	MM MMMM	MM
SSS	TT	RRRRRRRRR	EEEEEEEE	AAAAAAAAA	MM MMMM	MM
SSS	TT	RRRRRRRRR	EEEEEEEE	AAAAAAAAA	MM MM	MM
SS SS	TT	RR RR	EE	AA AA	MM	MM
SS SS	TT	RR RR	EE	AA AA	MM	MM
SSSSSSSSS	TT	RR RR	EEEEEEEEEE	AA AA	MM	MM
SSSSSSSS	TT	RR RR	EEEEEEEEEE	AA AA	MM	MM

Leeling
09494

SSSSSSSS	EEEEEEEEEE	VV VV	IIIIII	GGGGGGGG	NN	NN
SSSSSSSSSS	EEEEEEEEEE	VV VV	IIIIII	GGGGGGGGGG	NNN	NN
SS SS	EE	VV VV	II	GG GG	NNNN	NN
SSS SS	EE	VV VV	II	GG GG	NNNNN	NN
SSS	EE	VV VV	II	GG	NN NNN	NN
SSS	EEEEEEEE	VV VV	II	GG	NN NNN	NN
SSS	EEEEEEEE	VV VV	II	GG GG	NN NNN	NN
SS SS	EE	VV VV	II	GG GG	NN NNN	NN
SS SS	EE	VVVV	II	GG GG	NN NNNN	NN
SSSSSSSSS	EEEEEEEEEE	VV	IIIIII	GGGGGGGGGG	NN	NNN
SSSSSSSS	EEEEEEEEEE	VV	IIIIII	GGGGGGGG	NN	NN

BBBBBBBBBB	IIIIII	NN NN	222222	0000	888888
BBBBBBBBBBBB	IIIIII	NNN NN	222222222	0000000	88888888
BB BB	II	NNNN NN	222 222	000 000	88 88
BB BB	II	NNNN NN	22 222	000 00000	88 88
BB BB	II	NN NNN NN	222	00 00 00	88 88
BBBBBBBBBB	II	NN NNN NN	222	00 00 00	888888
BBBBBBBBBB	II	NN NNN NN	222	00 00 00	8888888888
BB BB	II	NN NNN NN	222	00 00 00	888 888
BB BB	II	NN NNNN	222	0000 000	88 88
BB BB	II	NN NNNN	222	000 000	888 888
BBBBBBBBBB	IIIIII	NN NNN	22222222222	00000000	8888888888
BBBBBBBBBB	IIIIII	NN NN	22222222222	0000	88888888

* * * * * UNIVAC 1100 TIME/SHARING EXEC ACCOUNT NUMBER * IHPADIR50021 LEV. CE36R2BHOST1 SITE * HOST 1 * * * * *

RUNID * STREAM	USER ID *	PART NUMBER * 00	INPUT DEVICE * DTK004	OUTPUT DEVICE * PR3
FILE NAME * PRT	CREATED AT: 08:53:16 JAN 14, 1981	PRINTED AT: 08:54:46 JAN 14, 1981		

A

DATE 011481

PAGE

1

FURPUR 28R1H1 E36 S74T11 01/14/81 08:53:34

6-4

A

SEVIGNBIN208*CGS(1).A

DATE 011481

PAGE

2

1 LIB SYSS*MSFCFTNS.
2 IN TPFS.REWORK
3 NOT TPFS.MAIN

@HDG,P BOOT

@PRT,S BOOT
FURPUR 28R1H1 E36 S74T11 01/14/81 08:53:35

BOOT

DATE 011481

PAGE

1

SEVIGNBIN208*CGS(11).BOOT

1 @CAT,P CGS,F/64/TRK/128
2 @CAT,P 14,F/2/TRK/4
3 @CAT,P 16,F/1/POS/2
4 @CAT,P 20,F/2/POS/4
5 @ASG,A CGS.
6 @ASG,A 14.
7 @ASG,A 16.
8 @ASG,A 20.
9 @COPY TPFs.,CGS.
10 @COPY,G PUR.,14.
11 @COPY,G PUR.,16.
12 @COPY,G PUR.,20.
13 @FREE PUR.
14 @FREE TPFs.
15 @USE TPFs.,CGS

@HDG,P

CHECK

@PRT,S CHECK

FURPUR 28R1H1 E36 S74T11 01/14/81 08:53:37

9-9

SEVIGNBIN208*CGS(1).CHECK

```

1  SUBROUTINE CHECK(COLNAM,TSHEET,NTABLE,ICOL,IOP)
2  INTEGER TSHEET
3  COMMON /TSHEET/TSHEET(16,32)
4  COMMON /IOUT/JOUT,JIN
5  DIMENSION IPTR(9,2)
6  CHARACTER BNAME*4(2)
7  CHARACTER COLNAM**4(2)
8  IF (NTABLE.EQ.0) GO TO 350
9  IF (NTABLE.LT.0) NTABLE=-NTABLE
10 IF (MOD(NTABLE,2).EQ.1) GO TO 10
11 N1=NTABLE-1
12 N2=NTABLE
13 GO TO 20
14 10 N1=NTABLE
15 N2=N1+1
16 20 DO 330 KK=N1,N2
17 DO 320 I=1,16
18 J3=TSHEET(I,KK)
19 IF (J3.EQ.0) GO TO 320
20 READ (16,J3) IPTR
21 DO 318 J=1,9
22 J1=IPTR(J,1)
23 IF (J1.EQ.0) GO TO 318
24 READ (20,J1) BNAME
25 DO 316 K=1,2
26 IF (BNAME(K).NE.COLNAM(K)) GO TO 318
27 316 CONTINUE
28 WRITE (6,9000) J1
29 9000 FORMAT (' MATCH AT',I6)
30 ICOL=IPTR(J,1)
31 IF (I.EQ.TSHEET.AND.KK.EQ.NTABLE) GO TO 340
32 GO TO 350
33 318 CONTINUE
34 320 CONTINUE
35 330 CONTINUE
36 GO TO 350
37 340 IF (IOP.EQ.2) GO TO 350
38 WRITE (JOUT,342)
39 342 FORMAT (' **** THIS COLUMN NAME ALREADY EXISTS FOR A GIVEN',
40 ' X' FACILITY NAME/CASE/TABLE/SHEET'/
41 'X8X','USE EDIT MENU TO CHANGE')
42 GO TO 360
43 350 IOP=0
44 360 CONTINUE
45 RETURN
46 END

```

ANDG,P

CNAME

@PRT,S

CNAME

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CNAME

DATE 011481

PAGE 1

SEVIGNBIN208*CGS(1).CNAME

```

1      SUBROUTINE CNAME(COLNAM,MULT)
2      COMMON /IOUT/JOUT,JIN
3      CHARACTER COLNAM*4(2)
4      CHARACTER ADUM*4(2),SDUM*8
5      EQUIVALENCE (ADUM(1),SDUM)
6      CHARACTER BLANK*1,DDUM*1,BLNK*4,N0*1,N9*1
7      CHARACTER IYY*1,IZZ*1
8      CHARACTER IA*1,IZ*1,ILP*1,IRP*1
9      DATA BLANK/' '/,BLNK/' '/
10     DATA IA/'A',IZ/'Z',ILP/'(',IRP/')',N0/'0',N9/'9'/
11     8 WRITE (JOUT,10)
12     FORMAT (5X,'WRITE STREAM NAME IN A8 FORMAT ')
13     11 READ (JIN,12,EHR=11) ADUM
14     12 FORMAT (2A4)
15     C      ISOLATE ANY MULTIPLIER
16     MULT=1
17     IZZ=SUBSTR(ADUM(1),1,1)
18     IF (IZZ.GE.IA.AND.IZZ.LE.IZ) GO TO 30
19     IF (IZZ.LT.N0.OR.IZZ.GT.N9) GO TO 8
20     IYY=SUBSTR(ADUM(1),2,1)
21     IF (IYY.NE.ILP) GO TO 8
22     DECODE(20,ADUM) MULT
23     20 FORMAT (I1)
24     C      REMOVE N1
25     SUBSTR(SDUM,1,6)=SUBSTR(SDUM,3,6)
26     SUBSTR(SDUM,7,2)=SUBSTR(BLNK,1,2)
27     C      REMOVE FINAL )
28     DO 22 I=8,1,-1
29     DDUM=SUBSTR(SDUM,I,1)
30     IF (DDUM.NE.IRP) GO TO 22
31     SUBSTR(SDUM,1,1)=SUBSTR(BLNK,1,1)
32     GO TO 30
33     22 CONTINUE
34     GO TO 8
35     30 DO 32 I=1,2
36     32 COLNAM(I)=ADUM(I)
37     RETURN
38     END

```

@HDG,P COLUMN

@PRT,5 COLUMN
FURPUR 28RIH1 E36 S74T11 01/14/81 08:53:39

SEVIGNBIN208*CGS(1).COLUMN

```

1  SUBROUTINE COLUMN(COLDES,COLVAR,CXTR,XTR)
2  CHARACTER COLDES*4
3  DIMENSION COLDES(12)
4  DIMENSION COLVAR(36)
5  COMMON /IOUT/ JOUT,JIN
6  CHARACTER PROMPT*8,COND*12
7  DIMENSION PROMPT(30),COND(5)
8  CHARACTER BLANK*1,DDUM*1
9  DIMENSION XTR(2,3)
10 CHARACTER CXTR*4(6,3)
11 CHARACTER YES*4,YYES*4
12 CHARACTER BDUM*4(3),TDUM*9
13 EQUIVALENCE (BDUM(1),TDUM)
14 DATA BLANK/' '/
15 DATA YYES/'YES '/
16 DATA (PROMPT(I),I=1,30)/
17  C'H2','CO','CO2','CH4','N2','O2','AR','H2S',
18  C'COS','CS2','SO2','NH3','HCN','HCL','NO','CL',
19  C'C2H4','C2H6','C3H6','C3H8','S','TOTL DRY','H2O',
20  C'TOTL WET','TOTL GAS','COAL','ASH','CARBON','TOT SLDS',
21  C'TOT STRM'/
22 DATA (COND(I),I=1,5)/
23 C'TEMP DEG, F','FRES PSIA','GAS MOL-WT',
24 C'POWER KW(+) ','BTU/HR(-)'/
25 DO 10 K=1,6
26 DO 10 J=1,3
27 10 CXTR(K,J)=' '
28 DO 12 K=1,2
29 DO 12 J=1,3
30 12 XTR(K,J)=0.
31 WRITE(JOUT,20)
32 20 FORMAT(5X,'WRITE STREAM DESCRIPTION IN 4 LINES OF 9 CHARACTERS '
33  C'EACH/8X,'WITHIN THE LIMITS INDICATED'//1X,'*',9X,'*')
34 DO 26 I=1,12,3
35 21 READ (JIN,22,ERR=21) BDUM
36 22 FORMAT(2A4,A1)
37  IX=0
38 DO 222 K=9,1,-1
39  DDUM=SUBSTR(TDUM,K,1)
40  IF (DDUM .NE. BLANK) GO TO 224
41  IX=IX+1
42 222 CONTINUE
43 224 IF (IX.LE.1) GO TO 227
44  IX=IX/2
45  IX1=9-IX
46  SUBSTR(TDUM,IX+1,IX1)=SUBSTR(TDUM,1,IX1)
47 DO 225 K=1,IX
48  SUBSTR(TDUM,K,1)=SUBSTR(BLANK,1,1)
49 225 CONTINUE
50 227 DO 226 K=1,3
51 226 COLDES(K+1-1)=BDUM(K)
52 26 CONTINUE
53 WRITE(JOUT,27)
54 27 FORMAT(5X,'WRITE THE MOLES/HR FOR THE FOLLOWING '
55  C'COMPOUNDS IN F-TYPE FORMAT.' /8X,'ZEROS MAY BE '
56  C','ENTERED AS BLANKS')

```

```

57      DO 40 I=1,30
58      WRITE (JOUT,30) PROMPT(I)
59      30 FORMAT(5X,A8)
60      31 READ (JIN,32,ERR=31) COLVAR(I)
61      32      FORMAT(F15.0)
62      IF (I.NE.21) GO TO 40
63      IXX=1
64      240 WRITE (JOUT,41)
65      41 FORMAT (5X,'ANSWER YES IF SPECIAL COMPOUNDS ARE REQUIRED')
66      43 READ (JIN,42,ERR=43) YES
67      42 FORMAT (A4)
68      IF (YES.NE.YYES) GO TO 40
69      WRITE (JOUT,44)
70      44 FORMAT (5X,'WRITE COMPOUND NAME IN A16 FORMAT')
71      45 READ (JIN,46,ERR=45) (CXTR(II,IXX),II=1,4)
72      46 FORMAT (4A4)
73      WRITE (JOUT,48)
74      48 FORMAT (5X,'WRITE COMPOUND FORMULA IN A8 FORMAT')
75      49 READ (JIN,50,ERR=49) (CXTR(II,IXX),II=5,6)
76      50 FORMAT (2A4)
77      WRITE (JOUT,52)
78      52 FORMAT (5X,'WRITE COMPOUND MOLECULAR WEIGHT IN ANY F-TYPE FORMAT')
79      53 READ (JIN,32,ERR=53) XTR(1,IXX)
80      WRITE (JOUT,54)
81      54 FORMAT (5X,'WRITE MOLES/HR IN ANY F-TYPE FORMAT')
82      55 READ (JIN,32,ERR=55) XTR(2,IXX)
83      IXX=IXX+1
84      IF (IXX.LE.3) GO TO 240
85      40 CONTINUE
86      56 WRITE (JOUT,58)
87      58 FORMAT(5X,'WRITE FOLLOWING CONDITIONS IN ANY F-',
88      C'TYPE FORMAT.'/'8X,'ZEROS MAY BE ENTERED A BLANKS')
89      DO 70 I=1,3
90      WRITE (JOUT,60) COND(I)
91      60 FORMAT(5X,A12)
92      61 READ (JIN,32,ERR=61) COLVAR(30+I)
93      70 CONTINUE
94      WRITE(JOUT,80) COND(4),COND(5)
95      80 FORMAT(5X,2A12)
96      81 READ (JIN,32,ERR=81) COLVAR(34)
97      COLVAR(35)=IXX-1
98      RETURN
99      END

```

AMDG,P COPY

APRT,S COPY
 FURPUR 28R1H1 E36 574711 01/14/81 08:53:40

COPY

DATE 011481

PAGE

1

SEVIGNBIN208*CGS(1),COPY

1 @CAT PRT.
2 @ASG,A PRT.
3 @BRKPT PRINTS/PRT
4 @XQT,AL SYSS*MSFCS.LISTIT
5 @BRKPT PRINTS
6 @SYM PRT,1,MHSP

@HDG,P

CSHEET

TI-9

@FTN,S CSHEET,CSHEET

FTN 9R1H2*01/14/81-08:53(10,)

```

1. SUBROUTINE CSHEET(NTABLE,ISHEET,IPTR,SYSNAM,DRAWN,ENGR,APPR,DATE)
2. COMMON/IOUT/JOUT,JIN
3. INTEGER TSHEET
4. CHARACTER DATE*4,SYSNAM*4,DRAWN*4,ENGR*4,APPR*4
5. DIMENSION DATE(2),SYSNAM(20),DRAWN(4),ENGR(4),APPR(4)
6. COMMON/TSHEET/TSHEET(16,32)
7. DIMENSION IPTR(9,2)
8. WRITE(JOUT,10)
9. 10 FORMAT(5X,'WRITE SHEET NUMBER IN I2 FORMAT WITH LEADING ZEROES')
10. 11 READ(JIN,12,ERR=11) ISHEET
11. 12 FORMAT(I2)
12. IF (TSHEET(ISHEET,NTABLE).GT.0) GO TO 20
13. WRITE(JOUT,16)
14. 16 FORMAT(' **** SHEET NUMBER DOES NOT EXIST ****')
15. GO TO 8
16. C
17. C LOCATE ORIGINAL DATA
18. 20 JJ=TSHEET(ISHEET,NTABLE)
19. READ (16*JJ) IPTR,SYSNAM,DRAWN,ENGR,APPR,DATE
20. 24 WRITE(JOUT,30)
21. 30 FORMAT(' 1 - CHANGE SYSTEM NAME'/
22.  &' 2 - CHANGE "DRAWN BY" NAME'/
23.  &' 3 - CHANGE "ENGR" NAME'/
24.  &' 4 - CHANGE "APPR" NAME'/
25.  &' 5 - CHANGE DATE'/
26.  &' 0 - RETURN TO CONTINUE')
27. IOP=0
28. 32 READ(JIN,34,ERR=32) IOP
29. 34 FORMAT(I1)
30. IF (IOP.GT.5) GO TO 32
31. IF (IOP.EQ.0) GO TO 100
32. GO TO (40,50,60,70,80),IOP
33. C
34. C SYSTEM NAME
35. 40 WRITE(JOUT,42)
36. 42 FORMAT(5X,'WRITE SYSTEM LABEL IN A76 FORMAT WITHIN THE LIMITS'
37.  &' INDICATED'/1X,'*',76X,'*')
38. 43 READ(JIN,44,ERR=43) (SYSNAM(I),I=1,19)
39. 44 FORMAT(19A4)
40. SYSNAM(20)=' '
41. GO TO 24
42. C
43. C DRAWN BY
44. 50 WRITE(JOUT,52)
45. 52 FORMAT(5X,'WRITE "DRAWN BY" NAME IN A16 FORMAT')
46. 53 READ (JIN,54,ERR=53) DRAWN
47. 54 FORMAT(4A4)
48. GO TO 24
49. C
50. C ENGINEER
51. 60 WRITE(JOUT,62)
52. 62 FORMAT(5X,'WRITE "ENGR" NAME IN A16 FORMAT')
53. 63 READ(JIN,54,ERR=63) ENGR
54. GO TO 24
55. C

```

CSHEET

DATE 011481

PAGE 2

```
56. C APPROVED
57. 70 WRITE(JOUT,72)
58. 72 FORMAT(5X,'WRITE APPR NAME IN A16 FORMAT')
59. 73 READ (JIN,54,ERR=73) APPR
60. GO TO 24
61. C
62. C DATE
63. 80 WRITE(JOUT,82)
64. 82 FORMAT(5X,'WRITE DATE IN MM/DD/YY FORMAT')
65. 83 READ (JIN,84,ERR=83)DATE
66. 84 FORMAT(2A4)
67. GO TO 24
68. 100 J3=TSHEET(1SHEET,NTABLE)
69. WRITE (16*J3) IPTR,SYSNAM,DRAWN,ENBR,APPR,DATE
70. RETURN
71. END
```

END FTN 167 IBANK 429 DBANK 514 COMMON

24HDG,P DEFIN

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DEFIN

DATE 011481

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@FTN,5 DEFIN,DEFIN
FTN 9R1H2*01/14/81-08,53(9,)

```

1. SUBROUTINE DEFIN(IER)
2. COMMON /TLIMIT/ NNAME,ICOLM,ICHAIN,JCOLM,JCHAIN
3. CHARACTER TNAME*4
4. INTEGER TCASE,TTABLE,TSHEET
5. COMMON /TNAME/ TNAME(2,4),NPTR(4)
6. COMMON /TCASE/ TCASE(16)
7. COMMON /TTABLE/ TTABLE(32)
8. COMMON /TSHEET/ TSHEET(16,32)
9. IER=0
10. DEFINE FILE 14(1,575,V,JDATA)
11. DEFINE FILE 16(512,52,Y,JCHAIN)
12. DEFINE FILE 20(5120,74,V,JCOLM)
13. FIND(14*1)
14. READ(14*),ERR=100) NNAME,ICOLM,ICHAIN,TNAME,NPTR,
15. TCASE,TTABLE,TSHEET
16. ICOLM=1
17. ICHAIN=1
18. RETURN
19. 100 IER=1
20. RETURN
21. END

```

END FTN 33 IBANK 47 DBANK 577 COMMON

@HOG,P DEFINE

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DEFINE

DATE 011481

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@FTN,5 DEFINE,DEFINE
FTN 9R1H2+01/14/81-08:53(20,)

```

1.      SUBROUTINE DEFINE
2.      COMMON /IOUT/JOUT,JIN
3.      CHARACTER NAM*4,DRAWN*4,ENGR*4,APPR*4
4.      DIMENSION NAM(2),DRAWN(4),ENGR(4),APPR(4)
5.      CHARACTER DATE*4,SYSNAM*4
6.      DIMENSION DATE(2),SYSNAM(20)
7.      CHARACTER COLNAM*4,COLDES*4
8.      DIMENSION COLNAM(2),COLDES(12)
9.      DIMENSION COLVAR(36)
10.     DIMENSION XTR(2,3)
11.     CHARACTER CXTR*4(6,3)
12.     CHARACTER YES*4,YYES*4
13.     DATA YES /'YES '/
14.     C DETERMINE OVERALL CONDITIONS
15.     10 CALL SELECT(NAM,ICASE,ITABNO,NTABLE)
16.     C READ IN SHEET DATA
17.     20 CALL SHEET(ISHEET,DATE,SYSNAM,NTABLE)
18.     IF(NTABLE .GT. 0) GO TO 30
19.     C DETERMINE OPTIONAL DATA
20.     CALL OPDATA(DRAWN,ENGR,APPR)
21.     C READ IN COLUMN DATA
22.     30 CALL CNAME(COLNAM,MULT)
23.     ICOL=0
24.     IOP=1
25.     CALL CHECK(COLNAM,ISHEET,NTABLE,ICOL,IOP)
26.     IF (IOP.EQ.1) GO TO 90
27.     IF (ICOL.NE.0) GO TO 32
28.     CALL COLUMN(COLDES,COLVAR,CXTR,XTR)
29.     C STORE COLUMN DATA
30.     32 CALL FILE(NAM,ICASE,ITABNO,DRAWN,ENGR,APPR,ISHEET,NTABLE,
31.     &DATE,SYSNAM,COLNAM,COLDES,COLVAR,CXTR,XTR,ICOL,MULT)
32.     90 WRITE(JOUT,100)
33.     100 FORMAT(5X,'ANSWER YES TO INPUT MORE COLUMN DATA')
34.     101 READ(JIN,102,ERR=101) YYES
35.     102 FORMAT(A4)
36.     IF(YYES .EQ. YES) GO TO 30
37.     WRITE(JOUT,110)
38.     110 FORMAT(5X,'ANSWER YES TO INPUT MORE SHEET DATA')
39.     111 READ(JIN,102,ERR=111) YYES
40.     IF(YYES .EQ. YES) GO TO 20
41.     WRITE(JOUT,120)
42.     120 FORMAT(5X,'ANSWER YES TO INPUT NEW FACILITY NAME/CASE/TABLE')
43.     121 READ (JIN,102,ERR=121) YYES
44.     IF (YYES .EQ. YES) GO TO 10
45.     RETURN
46.     END

```

END FTN 68 IBANK 272 DBANK 2 COMMON

@HDG,P DELETE

@PRT,5 DELETE
FURPUR 28R1H1 E36 S74T11 01/14/81 08:53:47

DELETE

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SEVIGNBIN208*CGS(1).DELETE

```

1      SUBROUTINE DELETE
2      COMMON /JOUT/ JOUT,JIN
3      COMMON /TLIMIT/ NNAME,ICOLM,ICHAIN
4      CHARACTER TNAME*4,NAME*4(2),BLANK*4
5      INTEGER TCASE,TTABLE,TSHEET
6      COMMON /TNAME/ TNAME(2,4),NPTR(4)
7      COMMON /TCASE/ TCASE(16)
8      COMMON /TTABLE/ TTABLE(32)
9      COMMON /TSHEET/ TSHEET(16,32)
10     DIMENSION IPTR(9,2)
11     CHARACTER COLNAM*4(2)
12     CHARACTER SYSNAM*4(20),DRAWN*4(4),ENGR*4(4),APPR*4(4),DATE*4(2)
13     CHARACTER YES*4,YYES*4
14     DATA BLANK/' '/
15     DATA YES/'YES '/
16     8 WRITE(JOUT,10)
17     10 FORMAT(' 1 - DELETE ENTIRE FACILITY'/
18     C' 2 - DELETE ENTIRE CASE'/
19     C' 3 - DELETE ENTIRE TABLE'/
20     C' 4 - DELETE ENTIRE SHEET'/
21     C' 5 - DELETE ENTIRE COLUMN'/
22     C' RETURN TO CONTINUE'/)
23     12 WRITE(JOUT,14)
24     14 FORMAT(5X,'WRITE CHANGE TYPE IN II FORMAT')
25     15 READ (JIN,16,ERR=15)IOP
26     16 FORMAT(I1)
27     IF(IOP.GT.5)GO TO 12
28     IF(IOP.EQ.0)GO TO 140
29     C
30     C FACILITY NAME
31     20 WRITE(JOUT,22)
32     22 FORMAT(5X,'WRITE FACILITY NAME IN A8 FORMAT')
33     23 READ(JIN,24,ERR=23)NAME
34     24 FORMAT(2A4)
35     DO 26 I=1,NNAME
36     IF(NAME(1).NE.TNAME(1,I))GO TO 26
37     IF(NAME(2).NE.TNAME(2,I))GO TO 26
38     GO TO 28
39     26 CONTINUE
40     GO TO 20
41     C
42     C REMOVE NAME AND UPDATE ALL POINTERS
43     28 IF(IOP.GT.1)GO TO 40
44     TNAME(1,I)=BLANK
45     TNAME(2,I)=BLANK
46     IP=NPTR(I)
47     NPTR(I)=-1
48     31 I=1
49     32 IQ=TCASE(IP-1+1)
50     TCASE(IP-1+1)=0
51     33 J=1
52     34 IR=TTABLE(IQ-1+J)
53     TTABLE(IQ-1+J)=0
54     35 K=1
55     36 IS=TSHEET(K,IR)
56     IF(IS.EQ.0)GO TO 39

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DELETE

DATE 011481

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57      TSHEET(K,IR)=0
58      READ(16,15)IPTR,SYSNAM,DRAWN,ENGR,APPR,DATE
59      L=1
60      37 IT=IPTR(L,1)
61      IF (IT.GT.0) IPTR(L,1)=0
62      L=L+1
63      IF(L.LE.9)GO TO 38
64      WRITE(16,15)IPTR,SYSNAM,DRAWN,ENGR,APPR,DATE
65      WRITE(6,900)IS,IPTR
66      39 K=K+1
67      IF(K.LE.16)GO TO 36
68      J=J+1
69      IF(J.LE.2)GO TO 34
70      I=I+1
71      IF(I.LE.4)GO TO 32
72      IF (IOP.NE.4) GO TO 204
73      WRITE (JOUT,200)
74      200 FORMAT (5X,'ANSWER YES TO DELETE MORE SHEETS')
75      READ (JIN,202) YYES
76      202 FORMAT (A4)
77      IF (YES.EQ.YYES) GO TO 80
78      GO TO 8
79      204 IF (IOP.NE.3) GO TO 208
80      WRITE (JOUT,206)
81      206 FORMAT (5X,'ANSWER YES TO DELETE MORE TABLES')
82      READ (JIN,202) YYES
83      IF (YES.EQ.YYES) GO TO 60
84      GO TO 8
85      208 IF (IOP.NE.2) GO TO 8
86      WRITE (JOUT,210)
87      210 FORMAT (5X,'ANSWER YES TO DELETE MORE CASES')
88      READ (JIN,202) YYES
89      IF (YES.EQ.YYES) GO TO 40
90      GO TO 8
91      C
92      C REMOVE CASE AND UPDATE ALL POINTERS
93      40 WRITE(JOUT,42)
94      42 FORMAT(5X,'WRITE CASE NUMBER IN I1 FORMAT')
95      43 READ(JIN,16,ERR=43)ICASE
96      NCASE=NPTR(I1)-1+ICASE
97      IQ=TCASE(NCASE)
98      IF(IQ.EQ.0)GO TO 40
99      IF(IOP.GT.2)GO TO 60
100      TCASE(NCASE)=0
101      I=4
102      GO TO 33
103      C
104      C REMOVE TABLE AND UPDATE ALL POINTERS
105      60 WRITE(JOUT,62)
106      62 FORMAT(5X,'WRITE TABLE NUMBER IN I1 FORMAT')
107      63 READ(JIN,16,ERR=63)ITABNO
108      NTABNO=IQ-1+ITABNO
109      IR=TTABLE(NTABNO)
110      IF(IR.EQ.0)GO TO 60
111      IF(IOP.GT.3)GO TO 80
112      TTABLE(NTABNO)=0
113      I=4

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DELETE

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114      J=2
115      GO TO 35
116
117      C      REMOVE SHEET AND UPDATE ALL POINTERS
118      80  WRITE(JOUT,82)
119      82  FORMAT(5X,'WRITE SHEET NUMBER IN I2 FORMAT WITH LEADING ZEROS')
120      83  READ(JIN,84,ERR=83)ISHEET
121      84  FORMAT(I2)
122      IS=TSHEET(ISHEET,NTABNO)
123      IF (IS.EQ.0)GO TO 80
124      IF (IOP.GT.4)GO TO 100
125      TSHEET(ISHEET,NTABNO)=0
126      READ(16*IS)IPTR,SYSNAM,DRAWN,ENGR,APPR,DATE
127      I=4
128      J=2
129      K=16
130      GO TO 37
131
132      C      REMOVE COLUMN AND UPDATE POINTERS
133      100  READ(16*IS)IPTR,SYSNAM,DRAWN,ENGR,APPR,DATE
134      DO 110 M=1,9
135      J1=IPTR(M,1)
136      IF (J1.EQ.0)GO TO 110
137      READ(20*J1)COLNAM
138      WRITE(JOUT,106)M,COLNAM
139      106  FORMAT(15,2A4)
140      CONTINUE
141      112  WRITE(JOUT,114)
142      114  FORMAT(5X,'WRITE NUMBER OF THE COLUMN TO BE DELETED'
143      &' USING I1 FORMAT')
144      115  READ(JIN,16,ERR=115)IX
145      IF (IX.EQ.0)GO TO 120
146      IPTR(IX,1)=0
147      WRITE (JOUT,116)
148      116  FORMAT (5X,'ANSWER YES TO DELETE MORE COLUMNS')
149      READ (JIN,202) YYES
150      IF (YES.EQ.YYES) GO TO 112
151      120  WRITE(16*IS)IPTR,SYSNAM,DRAWN,ENGR,APPR,DATE
152      WRITE(6,900)IS,IPTR
153      900  FORMAT(15,'**',2(9I5))
154      GO TO 8
155      140  WRITE (14*1) NNAME,ICOLM,ICHAIN,
156      X      TNAME,NPTR,TCASE,TTABLE,TSHEET
157      RETURN
158      END

```

81-9

ANDG,P

EDIT

8FTN,5 EDIT,EDIT

FTN 9R1H2*01/14/81-08:53(14,)

```

1.      SUBROUTINE EDIT
2.      CHARACTER NAM*4,TNAME*4
3.      DIMENSION NAM(2)
4.      CHARACTER COLNAM*4(2),COLDES*4(12)
5.      CHARACTER YES*4,YYES*4
6.      INTEGER TCASE,TTABLE,TSHEET
7.      COMMON/TNAME/TNAME(2,4),NPTR(4)
8.      COMMON/TCASE/TCASE(16)
9.      COMMON/TTABLE/TTABLE(32)
10.     COMMON/TSHEET/TSHEET(16,32)
11.     COMMON/TLIMIT/NNAME,ICOLM,ICHAIN
12.     COMMON/JOUT/JOUT,JOIN
13.     DIMENSION IPTR(9,2),COLVAR(36)
14.     DIMENSION XTR(2,3)
15.     CHARACTER CXTR*4(6,3)
16.     CHARACTER SYSNAM*4(20),DRAWN*4(4),ENGR*4(4),APPR*4(4),DATE*4(2)
17.     DATA YYES/'YES '/
18.     C      SELECT BASIC TABLE
19.     2      CALL SELECT(NAM,ICASE,ITABNO)
20.     C      CHECK EXISTANCE OF TABLE
21.     IER=0
22.     DO 6 I=1,NNAME
23.     DO 4 J=1,2
24.     IF(NAM(J).NE.TNAME(J,I)) GO TO 6
25.     4      CONTINUE
26.     GO TO 8
27.     6      CONTINUE
28.     IER=1
29.     8      NCASE=NPTR(I)-1+ICASE
30.     IF(TCASE(NCASE).EQ.0) IER=2
31.     NTABLE=TCASE(NCASE)-1+ITABNO
32.     IF(TTABLE(NTABLE).EQ.0) IER=3
33.     IF(IER.EQ.0) GO TO 20
34.     WRITE(JOUT,12)
35.     12     FORMAT(' ***ERROR NAME/CASE/TABLE ***')
36.     GO TO 2
37.     C      CHANGE SHEET DATA
38.     20     CALL CSHEET(NTABLE,ISHEET,IPTR,SYSNAM,DRAWN,ENGR,APPR,DATE)
39.     WRITE (6,900) IPTR
40.     900    FORMAT (9I5)
41.     C      CHANGE COLUMN DATA
42.     DO 40 I=1,9
43.     J1=IPTR(I,1)
44.     IF(J1.EQ.0) GO TO 40
45.     READ (20,J1) COLNAM
46.     WRITE(JOUT,24)I,COLNAM
47.     24     FORMAT(I5,2A4)
48.     40     CONTINUE
49.     42     WRITE(JOUT,44)
50.     44     FORMAT(5X,'WRITE NUMBER OF COLUMN TO BE CHANGED (N 11 FORMAT')
51.     45     READ (JIN,46,ERR=45)IOP
52.     46     FORMAT(I1)
53.     IF(IOP.EQ.0) GO TO 60
54.     J1=IPTR(IOP,1)
55.     IF(J1.EQ.0) GO TO 42

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EDIT

DATE 011981

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56.      CALL CNAME(COLNAM,MULT)
57.      IPTR(IOP,2)=MULT
58.      ICOL=0
59.      IOP=2
60.      CALL CHECK (COLNAM,ISHEET,NTABLE,ICOL,IOP)
61.      CALL COLUMN(COLDES,COLVAR,CXTR,XTR)
62.      IF (ICOL.NE.0) J1=ICOL
63.      IF (MULT.EQ.1) GO TO 56
64.      DO 50 I=1,30
1 65.      50 COLVAR(I)=COLVAR(I)/MULT
66.      DO 52 I=1,3
1 67.      52 XTR(2,I)=XTR(2,I)/MULT
68.      56 WRITE (20,J1) COLNAM,COLDES,COLVAR,CXTR,XTR
69.      58 J3=TSHEET(ISHEET,NTABLE)
70.      WRITE (16,J3) IPTR,SYSNAM,DRAWN,ENGR,APPR,DATE
71.      GO TO 42
72.      60 WRITE(JOUT,62)
73.      62 FORMAT(5X,'ANSWER YES TO EDIT MORE SHEET DATE')
74.      63 READ (JIN,64,ERR=63)YES
75.      64 FORMAT(A4)
76.      IF(IYES.EQ.YES) GO TO 20
77.      WRITE(JOUT,72)
78.      72 FORMAT(5X,'ANSWER YES TO EDIT NEW FACILITY NAME/CASE/TABLE')
79.      73 READ(JIN,64,ERR=73)YES
80.      IF(IYES.EQ.YES) GO TO 2
81.      RETURN
82.      END

```

END FTM 195 IBANK 355 DBANK 577 COMMON

ENDG,P FILE

QFTN,S FILE,FILE

FTN 9R1H2*01/14/81-08:53(53,)

```

1.      SUBROUTINE FILE(NAM,ICASE,ITABNO,DRAWN,ENGR,APPR,ISHEET,NTABLE,
2.      &DATE,SYSNAM,COLNAM,COLDES,COLVAR,CXTR,XTR,ICOL,MULT)
3.      COMMON /IOUT/ JOUT,JIN
4.      CHARACTER NAM*4,DRAWN*4,ENGR*4,APPR*4
5.      DIMENSION NAM(2),DRAWN(4),ENGR(4),APPR(4)
6.      CHARACTER DATE*4,SYSNAM*4
7.      DIMENSION DATE(2),SYSNAM(20)
8.      CHARACTER COLNAM*4,COLDES*4
9.      DIMENSION COLNAM(2),COLDES(12)
10.     DIMENSION COLVAR(36)
11.     COMMON /TLIMIT/ NNAME,ICOLM,ICHAIN,JCOLM,JCHAIN
12.     CHARACTER TNAME*4
13.     INTEGER TCASE,TTABLE,TSHEET
14.     COMMON /TNAME/ TNAME(2,4),NPTR(4)
15.     COMMON /TCASE/ TCASE(16)
16.     COMMON /TTABLE/ TTABLE(32)
17.     COMMON /TSHEET/ TSHEET(16,32)
18.     DIMENSION IPTR(9,2),JPTR(9,2)
19.     DIMENSION XTR(2,3)
20.     CHARACTER CXTR*4(6,3)
21.     IF (NNAME .EQ. 0) GO TO 100
22.   C   ADD SECOND AND SUBSEQUENT ENTRIES
23.     DO 4 I=1,NNAME
24.       IF (NAM(I) .NE. TNAME(1,I)) GO TO 4
25.       IF (NAM(2) .NE. TNAME(2,I)) GO TO 4
26.       GO TO 6
27.     4   CONTINUE
28.   C   TREAT AS A NEW NAME IF NO MATCH WITH EXISTING NAME
29.     GO TO 100
30.     6   NN=NPTR(1)-1+ICASE
31.   C   CHECK FOR MATCHING CASE
32.     IF (TCASE(NN) .EQ. 0) GO TO 110
33.     NTABLE=TCASE(NN) + ITABNO - 1
34.   C   CHECK FOR MATCHING TABLE
35.     IF (TTABLE(NTABLE) .EQ. 0) GO TO 120
36.     GO TO 124
37.   C   CREATE FIRST RECORDS
38.   100  DO 104 I=1,NNAME
39.       IF (NPTR(I) .LE. 0) GO TO 106
40.       104 CONTINUE
41.       106 TNAME(1,I)=NAM(1)
42.       TNAME(2,I)=NAM(2)
43.       IF (NPTR(I) .EQ. 0) NNAME=NNAME+1
44.       NPTR(I)=4*(I-1)+1
45.       110 INPTR=NPTR(I)
46.       NCASE=INPTR*ICASE-1
47.       TCASE(NCASE)=NCASE-1)*2+1
48.       ITPTR=TCASE(NCASE)
49.       NTABLE=ITPTR+ITABNO-1
50.       120 TTABLE(NTABLE)=1
51.   C   SEARCH FOR ALREADY EXISTING MATCH FOR COLUMN NAME
52.       124 JK=0
53.         DO 126 L=1,9
54.           DO 126 K=1,2
55.             JPTRIL,K)=0

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ORIGINAL PAGE IS
OF POOR QUALITY

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2      56.      126      IPTR(L,K)=0
      57.      J3=IABS(ITSHEET-NTABLE)
      58.      IF (J3.EQ.0) GO TO 135
      59.      READ(16,J3)JPTR,SYSNAM,DRAWN,ENGR,APPR,DATE
      60.      C      NEW COLUMN ONLY
      61.      135      DO 136 L=1,9
1      62.      DO 136 K=1,2
2      63.      136      IPTR(L,K)=JPTR(L,K)
      64.      DO 138 L=1,9
1      65.      IF (IPTR(L,1).GT.0)GO TO 138
1      66.      JK=L
1      67.      GO TO 140
1      68.      138      CONTINUE
      69.      GO TO 160
      70.      C      ADJUST MULTIPLIER COLUMN
      71.      140      IF (MULT.EQ.1.0D)ICOL.NE.0) GO TO 148
      72.      DO 141 I=1,30
1      73.      141      COLVAR(I)=COLVAR(I)/MULT
      74.      IXX=COLVAR(35)
      75.      DO 144 I=1,IXX
1      76.      144      XTR(I,1)=XTR(I,1)/MULT
1      77.      C      WRITE NEW COLUMN DATA
      78.      148      IF (ICOL.NE.0) GO TO 145
      79.      JCOLM=160*(NTABLE-1)+10*(ISHEET-1)*JK
      80.      J1=JCOLM
      81.      GO TO 149
      82.      145      JCOLM=ICOL
      83.      J1=JCOLM
      84.      GO TO 142
      85.      149      WRITE (20,JCOLM) COLNAM,COLDES,COLVAR,CXTR,XTR
      86.      142      IPTR(JK,1)=J1
      87.      IPTR(JK,2)=MULT
      88.      C      UPDATE CHAIN OF COLUMN POINTERS
      89.      150      IF (JK.EQ.1) THEN
1      90.      JCHAIN=16*(NTABLE-1)+ISHEET
1      91.      J3=JCHAIN
1      92.      WRITE(16,JCHAIN)IPTR,SYSNAM,DRAWN,ENGR,APPR,DATE
1      93.      TSHEET(ISHEET,NTABLE)=J3
1      94.      GO TO 200
1      95.      ELSE
1      96.      J3=TSHEET(ISHEET,NTABLE)
1      97.      WRITE(16,J3)IPTR,SYSNAM,DRAWN,ENGR,APPR,DATE
1      98.      GO TO 200
1      99.      END IF
1      100.      C      PRINT WARNING MESSAGE
      101.      160      WRITE(JOUT,162)
      102.      162      FORMAT(5X,'**** ALL COLUMNS FILLED FOR THIS SHEET *')
      103.      GO TO 200
      104.      C      RETURN TO MENU LIST
      105.      200      CONTINUE
      106.      WRITE(14,'1)NNAME,ICOLM,ICHAIN,TNAME,NPTR,TCASE,TTABLE,TSHEET
      107.      WRITE(6,602)IPTR
      108.      602      FORMAT(9I5)
      109.      WRITE(6,302) (TSHEET(I,NTABLE),I=1,16),ISHEET,NTABLE
      110.      302      FORHAT(16I5)
      111.      RETURN
      112.      END

```


FILE

DATE 011481

PAGE

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END FTN 410 IBANK 404 DBANK 579 COMMON

@HDG,P

GETON

@PRT,S

GETON

FURPUR 28R1H1 E36 574T11 01/14/81 08:54:01

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GETON

DATE 011481

PAGE

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SEVIGNBIN208*CGS(1).GETON

1 @ASG,A 14.
2 @ASG,A 16.
3 @ASG,A 20.
4 @FREE TPFs.
5 @USE TPFs.,CGS.

@MDG,P INIT

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INIT

DATE 011481

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1

@FTN,5 INIT,INIT

FTN 9R1H2*01/14/81-08:54(29,)

```

1.      SUBROUTINE INIT(IER)
2.      COMMON /TLIMIT/ NNAME,ICOLM,ICHAIN
3.      CHARACTER TNAME*4
4.      INTEGER TCASE,TTABLE,TSHEET
5.      COMMON /TNAME/ TNAME(2,4),NPTR(4)
6.      COMMON /TCASE/ TCASE(16)
7.      COMMON /TTABLE/ TTABLE(32)
8.      COMMON /TSHEET/ TSHEET(16,32)
9.      IER=0
10.     DEFINE FILE 14(1,575,U,JDATA)
11.     DEFINE FILE 16(512,52,U,JCHAIN)
12.     DEFINE FILE 20(5120,74,U,JCOLM)
13.     FIND(14*1)
14.     READ(14*1,ERR=100) NNAME,ICOLM,ICHAIN,TNAME,NPTR,
15.     &TCASE,TTABLE,TSHEET
16.     WRITE (6,9000) NNAME,TNAME,NPTR,TCASE,TTABLE,TSHEET
17.     9000 FORMAT (15/1X,4(2A4)/4I4/16I5/2(16I5/1/32(16I5/1))
18.     RETURN
19.     100 IER=1
20.     RETURN
21.     END

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END FTN 33 IBANK 78 DBANK 575 COMMON

@HOG,P MAIN

6-25

MAIN

DATE 011401

PAGE 1

@FTN,S MAIN,MAIN
FTN 9R1H2*01/14/81-08:54(23,)

```

1. C CREATE
2. C COAL GASIFICATION
3. C STREAM AND UTILITY TABLE
4. COMMON /IOUT/ JOUT,JIN,JTABLE
5. DATA JTABLE /4/,JIN/5/,JOUT/6/
6. IOP=0
7. C INITIALIZE POINTER TABLES
8. CALL INIT(IER)
9. IF(IER.NE.0) THEN
1 10. WRITE(JOUT,2)
1 11. 2 FORMAT(' ERROR IN BASIC POINTER TABLES')
1 12. ELSE
1 13. CONTINUE
1 14. END IF
1 15. C SELECT FROM MENU
16. 20 CALL MENU
17. C1000 CALL TIDY(IUP)
18. STOP
19. END

```

END FTN 17 IBANK 19 DBANK 3 COMMON

6-26

@HDG,P MAP

@PRT,S MAP
FURPUR 28R1H1 E36 574T11 01/14/81 08:54:07

MAP

DATE 011481

PAGE

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SEVIGNBIN208*CGS(1).MAP

1 @PACH CGS;
2 @PREP CGS.
3 @MAP,I CGS,XMAP,CGS,XQT
4 LIB SYSS*MSFCS.
5 @

@HDG,P

MENU

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@FTN,5      MENU,MENU
FTN 9R1H2*01/14/81-08:54(11,)
1.          SUBROUTINE MENU
2.          COMMON /IOUT/ JOUT,JIN,JTABLE
3.          2  WRITE(JOUT,10)
4.          10 FORMAT(10X,'STREAM AND UTILITY TABLE MENU'//)
5.          WRITE(JOUT,14)
6.          14 FORMAT(' 1 - DEFINE NEW TABLE'//)
7.          WRITE(JOUT,18)
8.          18 FORMAT(' 2 - REVISE EXISTING TABLE'//)
9.          WRITE(JOUT,22)
10.         22 FORMAT(' 3 - DELETE EXISTING TABLE'//)
11.         WRITE(JOUT,26)
12.         26 FORMAT(' 4 - PRINT SELECTED TABLE'//)
13.         WRITE(JOUT,30)
14.         30 FORMAT(' 5 - SAVE REVISION'//)
15.         WRITE(JOUT,34)
16.         34 FORMAT(5X,'PRESS RETURN TO EXIT'//)
17.         WRITE(JOUT,38)
18.         38 FORMAT(5X,'INPUT CHOICE IN 1-5 FORMAT'//)
19.         40 READ (JIN,42,ERR=40) IND
20.         42 FORMAT(I1)
21.         IF (IND.GT.5) GO TO 40
22.         IF (IND.LEQ.0) GO TO 1000
23.         GO TO (100,200,300,400,500),IND
24.         C  DEFINE (ADD) NEW TABLES
25.         100 CALL DEFINE
26.         GO TO 2
27.         C  EDIT EXISTING TABLE
28.         200 CALL EDIT
29.         IUP=1
30.         GO TO 2
31.         C  DELETE EXISTING TABLE
32.         300 CALL DELETE
33.         IUP=1
34.         GO TO 2
35.         C  PRINT SELECTED TABLE
36.         400 CALL PSELECT
37.         GO TO 2
38.         500 GO TO 2
39.         C  SAVE REVISIONS
40.         C 500 IUP=1
41.         C  GO TO 2
42.         C
43.         1000 RETURN
44.         END

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END FTN 71 IBANK 120 DBANK 3 COMMON

@HDG,P OPDATA

@PRT,5 OPDATA
 FURPUR 28R1H1 E36 S74T11 01/14/81 08:54:11

OPDATA

DATE 011981

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SEVIGNBIN208*CGS(1).OPDATA

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1      SUBROUTINE OPDATA(DRAWN,ENGR,APPR)
2      CHARACTER DRAWN*4,ENGR*4,APPR*4
3      DIMENSION DRAWN(4),ENGR(4),APPR(4)
4      COMMON /IOUT/JOUT,JIN
5      CHARACTER YES*4,YYES*4,BLANK*4
6      DATA YYES/'YES '/,BLANK/'  '/
7      DO 2 I=1,4
8      DRAWN(I)=BLANK
9      ENGR(I)=BLANK
10     APPR(I)=BLANK
11     2 CONTINUE
12     WRITE(JOUT,10)
13     10 FORMAT(5X,'ANSWER YES IF OPTIONAL DATA IS TO BE ENTERED')
14     11 READ(JIN,12,ERR=11) YES
15     12 FORMAT(A4)
16     IF (YES .EQ. YYES) THEN
17         WRITE(JOUT,20)
18         20 FORMAT(5X,'WRITE **DRAWN BY** NAME IN A16 FORMAT')
19         21 READ(JIN,22,ERR=21) DRAWN
20         22 FORMAT(4A4)
21         WRITE(JOUT,30)
22         30 FORMAT(5X,'WRITE **ENGR** NAME IN A16 FORMAT')
23         31 READ(JIN,22,ERR=31) ENGR
24         WRITE(JOUT,40)
25         40 FORMAT(5X,'WRITE **APPROVED BY** NAME IN A16 FORMAT')
26         41 READ(JIN,22,ERR=41) APPR
27     ELSE
28         CONTINUE
29     END IF
30     RETURN
31     END

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QHDG,P

OUTPUT

OUTPUT

DATE 011481

PAGE

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8FTN,5 OUTPUT,OUTPUT
FTN 9R1H2*01/14/81-08:54(56,1)

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1.      SUBROUTINE OUTPUT(NAM,ICASE,ITABNO,ISHEET,IER)
2.      COMMON /IOUT/JOUT,JIN
3.      CHARACTER NAM*4
4.      DIMENSION NAM(2)
5.      COMMON /TLIMIT/ NNAME
6.      CHARACTER TNAME*4
7.      INTEGER TCASE,TTABLE,TSHEET
8.      COMMON /TNAME/ TNAME(2,4),NPTR(4)
9.      COMMON /TCASE/ TCASE(16)
10.     COMMON /TTABLE/ TTABLE(32)
11.     COMMON /TSHEET/ TSHEET(16,32)
12.     CHARACTER SYSNAM*4,DRAWN*4,ENGR*4,APPR*4,DATE*4
13.     DIMENSION SYSNAM(20),DRAWN(4),ENGR(4),APPR(4),DATE(2)
14.     CHARACTER COLNAM*4,COLDES*4
15.     DIMENSION COLNAM(2,9),COLDES(3,9,4),COLVAR(36,9),IPTR(9,2)
16.     CHARACTER DUM*12
17.     CHARACTER SDUM*8(9),BLANK*1
18.     EQUIVALENCE (SDUM(1),COLNAM(1,1))
19.     DIMENSION XTR(2,3,9)
20.     CHARACTER CXTR*4(6,3,9),ACXTR*4(3,9,3)
21.     CHARACTER ACOLVR*4,BLNK*4
22.     DIMENSION ACOLVR(3,9,36)
23.     CHARACTER LPAR*4,RPAR*4
24.     DATA BLNK/' '
25.     DATA LPAR/'(' ,RPAR/') '
26.     DATA BLANK/' '
27.     DO 4 I=1,NNAME
28.     DO 2 J=1,2
29.     IF(TNAME(J,I) .NE. NAM(J)) GO TO 4
30.     CONTINUE
31.     GO TO 6
32.     CONTINUE
33.     IER=1
34.     GO TO 520
35.     6 NCASE=NPTR(I)-1+ICASE
36.     NTABLE=TCASE(NCASE)-1+ITABNO
37.     ISH=0
38.     DO 8 I=1,16
39.     IF(TSHEET(I,NTABLE).EQ.0) GO TO 8
40.     ISH=1
41.     8 CONTINUE
42.     IALL=0
43.     IF(ISHEET .NE. 99) GO TO 18
44.     IALL=1
45.     ISHEET=1
46.     16 IF (TSHEET(ISHEET,NTABLE) .EQ. 0) GO TO 500
47.     18 J3 = TSHEET(ISHEET,NTABLE)
48.     READ(16,J3) IPTR,SYSNAM,DRAWN,ENGR,APPR,DATE
49.     IOFNUM=0
50.     DO 20 I=1,9
51.     IF(IPTR(I,1) .EQ.0) GO TO 20
52.     IOFNUM=IOFNUM+1
53.     20 CONTINUE
54.     22 IX=0
55.     DO 31 I=20,1,-1

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1 56. IF (SYSNAM(I).NE.BLNK) GO TO 32
1 57. IX=IX+1
1 58. 31 CONTINUE
59. 32 IF (IX.EQ.0) GO TO 38
60. IX1=(20-IX)*4
61. IY=IOFNUM*11
62. IF (IY.LT.IX1) GO TO 38
63. IY1=(IY-IX1)/8
64. IF (IY1.EQ.0) GO TO 38
65. IX1=20-IX
66. DO 34 I=IX1,1,-1
1 67. 34 SYSNAM(I+IY1)=SYSNAM(I)
68. DO 36 I=1,IY1
1 69. 36 SYSNAM(I)=BLNK
70. 38 K=0
71. DO 40 KK=1,9
1 72. J1=IPTR(KK,1)
1 73. IF (J1.LE.0) GO TO 40
1 74. K=K+1
1 75. READ (20,J1)(COLNAM(I,K),I=1,2),((COLDES(I,K,J),I=1,3),
1 76. J1=1,4),(COLVAR(I,K),I=1,36),
1 77. C ((CXTR(I,J,K),I=1,6),J=1,3),((XTR(I,J,K),I=1,2),J=1,3)
1 78. 40 CONTINUE
79. DO 50 I=1,36
1 80. DO 50 J=1,9
2 81. DO 50 K=1,3
3 82. ACOLVR(K,J,I)=BLNK
3 83. 50 CONTINUE
84. DO 52 I=1,3
1 85. DO 52 J=1,9
2 86. DO 52 K=1,3
3 87. AXTR(K,J,I)=BLNK
3 88. 52 CONTINUE
89. DO 60 I=1,36
1 90. DO 60 J=1,IOFNUM
2 91. IF(COLVAR(I,J)),60,
2 92. IF (I.LE.30) COLVAR(I,J)=COLVAR(I,J)*IPTR(J,2)
2 93. ENCODE(62,DUM) COLVAR(I,J)
2 94. 62 FORMAT(E11.5)
95. SUBSTR(ACOLVR(1,J,I),1,4)=SUBSTR(DUM,1,4)
96. SUBSTR(ACOLVR(2,J,I),1,4)=SUBSTR(DUM,5,4)
97. SUBSTR(ACOLVR(3,J,I),1,4)=SUBSTR(DUM,9,4)
98. SUBSTR(ACOLVR(3,J,I),1,3)=SUBSTR(DUM,10,3)
99. IF(COLVAR(I,J)),60,60
2 100. C BITS(ACOLVR(1,J,I),1,9)=BITS(LPAR,1,9)
2 101. C BITS(ACOLVR(3,J,I),19,9)=BITS(RPAR,1,9)
2 102. SUBSTR(ACOLVR(1,J,I),1,1)=SUBSTR(LPAR,1,1)
2 103. SUBSTR(ACOLVR(3,J,I),3,1)=SUBSTR(RPAR,1,1)
2 104. 60 CONTINUE
105. DO 88 J=1,IOFNUM
1 106. IY=0
1 107. DO 75 K=8,1,-1
2 108. IF (SUBSTR(SDUM(J),K,1).NE.BLANK) GO TO 76
2 109. IY=IY+1
2 110. 75 CONTINUE
1 111. 76 IS=8-IY
1 112. IZ=0

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ORIGINAL PAGE IS
OF POOR QUALITY


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1      113.      IF (IPTR(J,2)-1.0) .78,
1      114.      SUBSTR(SDUM(J),IS+1,1)=SUBSTR(LPAR,1,1)
1      115.      IZ=2
1      116.      SUBSTR(SDUM(J),IZ+1,8-IZ)=SUBSTR(SDUM(J),1,8-IZ)
1      117.      SUBSTR(SDUM(J),IZ,1)=SUBSTR(LPAR,1,1)
1      118.      ENCODE (1,77,SDUM(J)) IPTR(J,2)
1      119.      77 FORMAT (I1)
1      120.      IZ=3
1      121.      78 IX=(8-(IS+IZ))/2
1      122.      IF (IX.EQ.0) GO TO 88
1      123.      SUBSTR(SDUM(J),IX+1,8-IX)=SUBSTR(SDUM(J),1,8-IX)
1      124.      SUBSTR(SDUM(J),1,IX)=SUBSTR(BLNK,1,IX)
1      125.      88 CONTINUE
126.      WRITE (JOUT,1130)
127.      1130 FORMAT(' CLEAR PAGE')
128.      PAUSE
129.      WRITE(JOUT,64)
130.      64 FORMAT('1')
131.      WRITE(JOUT,10)
132.      10 FORMAT(9X,'GEORGE C. MARSHALL SPACE FLIGHT CENTER')
133.      WRITE(JOUT,21)NAM,DRAWN,DATE
134.      21 FORMAT(2X,'NASA',14X,'HUNTSVILLE, ALABAMA',22X,
135.      135.      'FACILITY ',24X,4X,'DRAWN BY ',44X,4X,'DATE ',24X)
136.      WRITE(JOUT,30)ICASE,ENGR,ISHEET,ISH
137.      30 FORMAT(15X,'COAL GASIFICATION TASK TEAM',19X,'CASE NO. ',
138.      138.      '11,11X,'ENGR. ',44X,4X,'SHEET ',12,' OF ',12)
139.      WRITE(JOUT,41)APPR,ITABNO
140.      41 FORMAT(9X,'COAL GASIFICATION STREAM & UTILITY TABLE',
141.      141.      '34X,'APPROVED ',44X,4X,'TABLE NO. ',2X,13)
142.      IF (ITABNO .EQ. 1) THEN
143.      WRITE(JOUT,55) SYSNAM
144.      ELSE
145.      WRITE(JOUT,51) SYSNAM
146.      END IF
147.      55 FORMAT(/10X,'MODULE SYSTEM',9X,20A4)
148.      51 FORMAT(/9X,'FACILITY SYSTEM',9X,20A4)
149.      WRITE(JOUT,61) ((COLNAM(I,J),I=1,2),J=1,IOFNUM)
150.      61 FORMAT(10X,'STREAM NUMBER',12X,2A4,8(3X,2A4))
151.      WRITE(JOUT,70) ((COLDES(I,J,1),I=1,3),J=1,IOFNUM)
152.      70 FORMAT(7X,'STREAM DESCRIPTION',7X,9(2X,2A4,A1))
153.      DO 66 K=2,4
154.      WRITE(JOUT,72) ((COLDES(I,J,K),I=1,3),J=1,IOFNUM)
155.      72 FORMAT(32X,9(2X,2A4,A1))
156.      66 CONTINUE
157.      WRITE(JOUT,80)
158.      80 FORMAT(12X,'COMPONENTS',10X,
159.      159.      '***** L B - M O L E S / H R *****')
160.      WRITE(JOUT,90)
161.      90 FORMAT(5X,'NAME',7X,'FORMULA',10X,'MOL-WT')
162.      WRITE(JOUT,100) ((ACOLVR(K,J,1),K=1,3),J=1,IOFNUM)
163.      100 FORMAT(1X,'HYDROGEN H2 2.02',1X,9(2A4,A3))
164.      WRITE(JOUT,110) ((ACOLVR(K,J,2),K=1,3),J=1,IOFNUM)
165.      110 FORMAT(1X,'CARBON MONOXIDE CO 28.01',1X,9(2A4,A3))
166.      WRITE(JOUT,120) ((ACOLVR(K,J,3),K=1,3),J=1,IOFNUM)
167.      120 FORMAT(1X,'CARBON DIOXIDE CO2 44.01',1X,9(2A4,A3))
168.      WRITE(JOUT,130) ((ACOLVR(K,J,4),K=1,3),J=1,IOFNUM)
169.

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170. 130 FORMAT(1X,'METHANE CH4 16.04',1X,9(2A4,A3))
171. WRITE(JOUT,140)((ACOLVR(K,J,5),K=1,3),J=1,IOFNUM)
172. 140 FORMAT(1X,'NITROGEN N2 28.01',1X,9(2A4,A3))
173. WRITE(JOUT,150)((ACOLVR(K,J,6),K=1,3),J=1,IOFNUM)
174. 150 FORMAT(1X,'OXYGEN O2 32.00',1X,9(2A4,A3))
175. WRITE(JOUT,160)((ACOLVR(K,J,7),K=1,3),J=1,IOFNUM)
176. 160 FORMAT(1X,'ARGON AR 40.00',1X,9(2A4,A3))
177. WRITE(JOUT,170)((ACOLVR(K,J,8),K=1,3),J=1,IOFNUM)
178. 170 FORMAT(1X,'HYDROGEN SULFIDE H2S 34.08',1X,9(2A4,A3))
179. WRITE(JOUT,180)((ACOLVR(K,J,9),K=1,3),J=1,IOFNUM)
180. 180 FORMAT(1X,'CARBONYL SULFIDE COS 60.08',1X,9(2A4,A3))
181. WRITE(JOUT,190)((ACOLVR(K,J,10),K=1,3),J=1,IOFNUM)
182. 190 FORMAT(1X,'CARBON DISULFIDE CS2 76.14',1X,9(2A4,A3))
183. WRITE(JOUT,200)((ACOLVR(K,J,11),K=1,3),J=1,IOFNUM)
184. 200 FORMAT(1X,'SULFUR DIOXIDE SO2 64.06',1X,9(2A4,A3))
185. WRITE(JOUT,210)((ACOLVR(K,J,12),K=1,3),J=1,IOFNUM)
186. 210 FORMAT(1X,'AMMONIA NH3 17.03',1X,9(2A4,A3))
187. WRITE(JOUT,220)((ACOLVR(K,J,13),K=1,3),J=1,IOFNUM)
188. 220 FORMAT(1X,'HYDROGEN CYANIDE HCN 27.03',1X,9(2A4,A3))
189. WRITE(JOUT,230)((ACOLVR(K,J,14),K=1,3),J=1,IOFNUM)
190. 230 FORMAT(1X,'HYDROGEN CHLORIDE HCL 36.46',1X,9(2A4,A3))
191. WRITE(JOUT,240)((ACOLVR(K,J,15),K=1,3),J=1,IOFNUM)
192. 240 FORMAT(1X,'NITROUS OXIDE NO 30.01',1X,9(2A4,A3))
193. WRITE(JOUT,250)((ACOLVR(K,J,16),K=1,3),J=1,IOFNUM)
194. 250 FORMAT(1X,'CHLORINE CL 35.45',1X,9(2A4,A3))
195. WRITE(JOUT,260)((ACOLVR(K,J,17),K=1,3),J=1,IOFNUM)
196. 260 FORMAT(1X,'ETHYLENE C2H4 28.05',1X,9(2A4,A3))
197. WRITE(JOUT,270)((ACOLVR(K,J,18),K=1,3),J=1,IOFNUM)
198. 270 FORMAT(1X,'ETHANE C2H6 30.07',1X,9(2A4,A3))
199. WRITE(JOUT,280)((ACOLVR(K,J,19),K=1,3),J=1,IOFNUM)
200. 280 FORMAT(1X,'PROPYLENE C3H6 42.09',1X,9(2A4,A3))
201. WRITE(JOUT,290)((ACOLVR(K,J,20),K=1,3),J=1,IOFNUM)
202. 290 FORMAT(1X,'PROPANE C3H8 44.09',1X,9(2A4,A3))
203. WRITE(JOUT,300)((ACOLVR(K,J,21),K=1,3),J=1,IOFNUM)
204. 300 FORMAT(1X,'SULFUR S 32.07',1X,9(2A4,A3))
205. 302 CONTINUE
206. JMAX=0
207. DO 1310 J=1,IOFNUM
1 208. IXX=COLVAR(35,J)
1 209. IF (IXX.EQ.0) GO TO 1310
1 210. IF (IXX.GT.JMAX) JMAX=IXX
1 211. K=IXX
1 212. XTR(2,K,J)=XTR(2,K,J)*IPTR(J,2)
1 213. ENCODE(62,0UM) XTR(2,K,J)
1 214. SUBSTR(AXTR(1,J,K),1,4)=SUBSTR(0UM,1,4)
1 215. SUBSTR(AXTR(2,J,K),1,4)=SUBSTR(0UM,5,4)
1 216. SUBSTR(AXTR(3,J,K),1,4)=SUBSTR(0UM,9,4)
1 217. SUBSTR(AXTR(3,J,K),1,3)=SUBSTR(0UM,10,3)
1 218. 1310 CONTINUE
219. IF (JMAX.EQ.0) GO TO 308
220. DO 1320 I=1,JMAX
1 221. DO 1314 II=1,IOFNUM
2 222. IF (CXTR(1,I,II).NE.0BLNK) GO TO 1316
2 223. 1314 CONTINUE
1 224. 1316 CONTINUE
1 225. WRITE(JOUT,1312)(CXTR(K,I,II),K=1,6),XTR(1,I,II),
1 226. X ((AXTR(K,J,II),K=1,3),J=1,IOFNUM)

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1 227. 1312 FORMAT (1X,4A4,2X,2A4,F5.2,1X,9(2A4,A3))
1 228. 1320 CONTINUE
229. 308 IX=3-JMAX
230. DO 1322 I=1,IX
1 231. WRITE (JOUT,1324)
1 232. 1324 FORMAT (' ')
1 233. 1322 CONTINUE
234. WRITE(JOUT,310) ((ACOLVR(K,J,22),K=1,3),J=1,IOFNUM)
235. 310 FORMAT(5X,'TOTAL DRY',19X,9(2A4,A3))
236. WRITE(JOUT,320) ((ACOLVR(K,J,23),K=1,3),J=1,IOFNUM)
237. 320 FORMAT(1X,'WATER' H2O 18.02',1X,9(2A4,A3))
238. WRITE(JOUT,330) ((ACOLVR(K,J,24),K=1,3),J=1,IOFNUM)
239. 330 FORMAT(5X,'TOTAL WET'19X,9(2A4,A3))
240. WRITE(JOUT,326)
241. 326 FORMAT(32X,
242. ('***** L B S / H R *****'
243. ('*****'))
244. WRITE(JOUT,340) ((ACOLVR(K,J,25),K=1,3),J=1,IOFNUM)
245. 340 FORMAT(5X,'TOTAL GAS/LIQUID',12X,9(2A4,A3))
246. WRITE(JOUT,350) ((ACOLVR(K,J,26),K=1,3),J=1,IOFNUM)
247. 350 FORMAT(1X,'COAL',28X,9(2A4,A3))
248. WRITE(JOUT,360) ((ACOLVR(K,J,27),K=1,3),J=1,IOFNUM)
249. 360 FORMAT(1X,'ASH',29X,9(2A4,A3))
250. WRITE(JOUT,365) ((ACOLVR(K,J,28),K=1,3),J=1,IOFNUM)
251. 365 FORMAT(1X,'CARBON',26X,9(2A4,A3))
252. WRITE(JOUT,370) ((ACOLVR(K,J,29),K=1,3),J=1,IOFNUM)
253. 370 FORMAT(5X,'TOTAL SOLIDS',16X,9(2A4,A3))
254. WRITE(JOUT,380) ((ACOLVR(K,J,30),K=1,3),J=1,IOFNUM)
255. 380 FORMAT(10X,'TOTAL STREAM',11X,9(2A4,A3))
256. WRITE(JOUT,390) ((ACOLVR(K,J,31),K=1,3),J=1,IOFNUM)
257. 390 FORMAT(1X,'TEMPERATURE,DEG F',15X,9(2A4,A3))
258. WRITE(JOUT,400) ((ACOLVR(K,J,32),K=1,3),J=1,IOFNUM)
259. 400 FORMAT(1X,'PRESSURE,PSIA',19X,9(2A4,A3))
260. WRITE(JOUT,410) ((ACOLVR(K,J,33),K=1,3),J=1,IOFNUM)
261. 410 FORMAT(1X,'GAS/LIQ MOLE WEIGHT,LB/LB-MOL ',2X,9(2A4,A3))
262. WRITE(JOUT,430) ((ACOLVR(K,J,34),K=1,3),J=1,IOFNUM)
263. 430 FORMAT(1X,'POWER,KW (BTU/HR)',14X,9(2A4,A3))
264. PAUSE
265. 500 IF (IALL.EQ.0) GO TO 520
266. ISHEET=ISHEET+1
267. IF (ISHEET.GT.16) GO TO 520
268. GO TO 16
269. 520 RETURN
270. END

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END FTM 914 IBANK 3896 DBANK 575 COMMON

AMDG,P PSELCY

APRT,S PSELCY
 FURPUR 28R1M1 E36 574T11 01/14/81 08:54:24

PSELECT

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SEVIGNBIN208*CGS(1).PSELECT

```
1 SUBROUTINE PSELECT
2 COMMON /IOUT/JOUT,JIN
3 CHARACTER NAM*4
4 DIMENSION NAM(2)
5 CHARACTER YES*4,YYES*4
6 DATA YES/'YES '/
7 C DETERMINE OVERALL TABLE
8 2 CALL SELECT(NAM,ICASE,ITABNO)
9 C SELECT ONE SHEET OR ALL SHEETS
10 4 CALL SHTNUM(ISHEET)
11 IER=0
12 CALL OUTPUT(NAM,ICASE,ITABNO,ISHEET,IER)
13 IF(IER.EQ.1) GO TO 2
14 WRITE(JOUT,10)
15 10 FORMAT(' ANSWER YES TO PRINT MORE INDIVIDUAL SHEETS')
16 11 READ(JIN,12,ERR=11)YYES
17 12 FORMAT(A4)
18 IF(YYES.EQ.YES)GO TO 4
19 WRITE(JOUT,20)
20 20 FORMAT(5X,'ANSWER YES TO PROCESS MORE TABLES')
21 21 READ(JIN,12,ERR=21)YYES
22 IF(YYES.EQ.YES) GO TO 2
23 RETURN
24 END
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ENDG,P

SELECT

SELECT

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@FTN,S SELECT,SELECT
FTN 9R1H2*01/14/81-08154(9,)

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1.      SUBROUTINE SELECTINAM,ICASE,ITABNO,LTABLE)
2.      COMMON /IOUT/ JOUT,JIN
3.      COMMON /TLIMIT/NNAME
4.      CHARACTER TNAME*4
5.      INTEGER TCASE,TTABLE
6.      COMMON /TNAME/TNAME(2,4),NPTR(4)
7.      COMMON /TCASE/TCASE(16)
8.      COMMON /TTABLE/TTABLE(32)
9.      CHARACTER NAM*4
10.     DIMENSION NAM(2)
11.     WRITE(JOUT,10)
12.     10 FORMAT(5X,'WRITE FACILITY NAME IN A8 FORMAT')
13.     11 READ(JIN,12,ERR=11) NAM
14.     12 FORMAT(2A4)
15.     WRITE(JOUT,20)
16.     20 FORMAT(5X,'WRITE CASE NUMBER IN I1 FORMAT')
17.     21 READ(JIN,22,ERR=21) ICASE
18.     22 FORMAT(I1)
19.     WRITE(JOUT,30)
20.     30 FORMAT(5X,'WRITE TABLE NUMBER IN I1 FORMAT')
21.     31 READ(JIN,32,ERR=31) ITABNO
22.     32 FORMAT(I1)
23.     LTABLE=0
24.     IF(NNAME .EQ.0)RETURN
25.     DO 36 I=1,NNAME
26.     IF(NAM(1).NE.TNAME(I,I))GO TO 36
27.     IF(NAM(2).NE.TNAME(2,I)) GO TO 36
28.     GO TO 38
29.     36 CONTINUE
30.     RETURN
31.     38 NCASE=NPTR(I)-1+ICASE
32.     IF(TCASE(NCASE).EQ.0)RETURN
33.     NTABLE=TCASE(NCASE)-1+ITABNO
34.     IF(TTABLE(NTABLE).EQ.0)RETURN
35.     LTABLE=NTABLE
36.     RETURN
37.     END

```

END FTN 105 IBANK 109 DBANK 63 COMMON

@HOG,P

SHEET

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SHEET

DATE 011481

PAGE 1

@FTN,5 SHEET,SHEET

FTN 9RIH2*01/14/81-08:54(21,1)

```

1. SUBROUTINE SHEET(1SHEET,DATE,SYSNAM,NTABLE)
2. INTEGER TSHEET
3. COMMON /TSHEET/TSHEET(16,32)
4. CHARACTER SYSNAM*4,DATE*4
5. DIMENSION SYSNAM(20),DATE(2)
6. COMMON /IOUT/ JOUT,JIN
7. WRITE(JOUT,10)
8. 10 FORMAT(5X,'WRITE SHEET NUMBER IN I2 FORMAT WITH LEADING ZEROES')
9. 11 READ(JIN,12,ERR=111) 1SHEET
10. 12 FORMAT(I2)
11. IF(NTABLE .EQ.0) GO TO 14
12. IF(1SHEET(1SHEET,NTABLE) .EQ.0) THEN
13.     NTABLE=-NTABLE
14. ELSE
15.     RETURN
16. END IF
17. 14 WRITE(JOUT,20)
18. 20 FORMAT(5X,'WRITE DATE IN FORMAT MM/DD/YY')
19. 21 READ(JIN,22,ERR=211) DATE
20. 22 FORMAT(2A4)
21. WRITE(JOUT,30)
22. 30 FORMAT(5X,'WRITE SYSTEM LABEL IN A76 FORMAT WITHIN THE LIMITS'
23.     C' INDICATED'/1X,'*',76X,'*')
24. 31 READ(JIN,32,ERR=311) (SYSNAM(I),I=1,19)
25. 32 FORMAT(19A4)
26. SYSNAM(20)=' '
27. RETURN
28. END

```

END FTN 72 IBANK 137 DBANK 514 COMMON

@HDG,P SHTNUM

@PRT,5 SHTNUM

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SHTNUM

DATE 011481

PAGE

1

SEVIGNBIN208*CGS(1).SHTNUM

```
1 SUBROUTINE SHTNUM(1SHEET)
2 COMMON /IOUT/ JOUT,JIN
3 WRITE(JOUT,10)
4 10 FORMAT(5X,'WRITE SHEET(1-16) NUMBER TO BE PRINTER IN 12 FORMAT',
5 6', USING LEADING ZEROES'/
6 60X,'USE 99 IF ALL SHEETS ARE REQUIRED')
7 11 READ(JIN,12,ERR=11) 1SHEET
8 12 FORMAT(12)
9 RETURN
10 END
```

@HOG,P

UPDATE

@PRT,S

UPDATE

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UPDATE

DATE 011481

PAGE

1

SEVIGNBIN208*CGS(1).UPDATE

```
1 @ASG,TF STREAM,U95,SAVE00 - CGS-STREAM-TABLE
2 @COPY,GM CGS.,STREAM.
3 @COPY,GM 14.,STREAM.
4 @COPY,GM 16.,STREAM.
5 @COPY,GM 20.,STREAM.
6 @XQT MIR*ADS.TPNO
7 STREAM
8 @FREE STREAM
```

@HDG,P XMAP

@PRT,S XMAP

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XMAP

SEVIGNBIN208*CGS(1).XMAP
1 LIB SYSS*MSFCS.

DATE 011481

PAGE 1

@BRKPT PRINTS

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APPENDIX A
DOCUMENTATION CHECKLIST

DOCUMENTATION CHECKLIST

	Required	Completed	If not contained herein can be found in:
1. Title Page	✓	✓	
2. Table of Contents	✓	✓	
3. Abstract	✓	✓	
4. Introduction			
a. Objective or Purpose		✓	
b. MSFC Form 3559	✓	✓	
c. Background		✓	
d. Related		✓	
5. Problem Task Description	✓	✓	
6. Method of Solution	✓	✓	
7. Program Description			
a. Operating Environment			
(1) Hardware			
(a) Computer	✓	✓	
(b) Core Requirement		✓	
(c) Magnetic Tapes		✓	
(d) Card Punch			
(e) Plotter			
(f) Drum/Disc		✓	
(g) Other			
(2) Software			
(a) Operating System	✓	✓	
(b) Programming Language(s)	✓	✓	
(c) Type of Run		✓	
(d) Library Subroutines ..		✓	
b. Program Specifications		✓	
c. Subroutines or Subprograms (other than library)		✓	
d. Source Code Listing		✓	
e. Detailed Flow Charts			
8. Operating Instructions			
a. Deck Setup			
(1) Deck Sequence		✓	
(2) Restart Sequence			
(3) Operator Instruction Card ..			

(4) Magnetic Tape Save Labels .	_____	_____	_____
(5) Computer Time Requirements	_____	_____	_____
b. Input			
(1) Cards	_____	_____	_____
(2) Magnetic Tapes	_____	✓	_____
(3) Drum/Disc	_____	✓	_____
(4) Other	_____	✓	_____
c. Output			
(1) Cards	_____	_____	_____
(2) Magnetic Tapes	_____	✓	_____
(3) Drum/Disc	_____	_____	_____
(4) Printout	_____	✓	_____
(5) Plots	_____	_____	_____
(6) Other	_____	✓	_____
d. Restrictions and/or Limitations	_____	_____	_____
e. Diagnostics	_____	_____	_____
f. Test Case	_____	✓	_____
9. Symbols	_____	_____	_____
10. References	_____	_____	_____
11. Appendices			
a. Documentation Checklist	_____	✓	_____
b. Documentation Approval	_____	✓	_____
c. Other	_____	_____	_____

APPENDIX B
DOCUMENTATION APPROVAL

DOCUMENTATION APPROVAL

Documentation Prepared By:

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Kathy Hiles
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CSC 453 0918
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5-22-81
Date

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5-26-81
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(Project Officer or Monitor)

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Van McAuley
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5-28-81
Date

ORIGINAL PAGE IS
OF POOR QUALITY